MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT
FWP# 7153105

SEVERAL NATURAL SPRINGS ARE LOCATED NEAR THE PROJECT SITE WHICH COULD CAUSE A DIFFICULT WORKING ENVIRONMENT FOR CONSTRUCTION OF THE RETAINING WALL. HOWEVER, THESE SPRINGS TEND TO DRY OUT BY MID TO LATE SUMMER. THE CONTRACTOR HAS THE FOLLOWING OPTIONS FOR SCHEDULING COMPLETION OF THE WORK:

1.PERFORM WORK FOR CONSTRUCTION OF BOTH THE BUILDING AND RETAINING WALL DURING LATE SPRING TO MID-SUMMER MONTHS (JUNE – AUGUST)

2.PERFORM WORK FOR CONSTRUCTION OF THE BUILDING DURING LATE SPRING TO MID-SUMMER MONTHS (JUNE – AUGUST) AND RETURN TO COMPLETE CONSTRUCTION OF THE RETAINING WALL IN LATE SUMMER OR EARLY FALL (MID-AUGUST – OCTOBER). FINAL COMPLETION DATE TO BE NO LATER THAN NOVEMBER 1, 2016.

3.PERFORM WORK FOR CONSTRUCTION OF BOTH THE BUILDING AND RETAINING WALL DURING LATE SUMMER OR EARLY FALL (MID-AUGUST - OCTOBER). FINAL COMPLETION DATE TO BE NO LATER THAN NOVEMBER 1, 2016

ABBREVIATIONS

A	
AFF	ABOVE
AC	ACOUSTICAL
ACT	ACOUSTICAL TILE
ADJ	ADJUSTABLE
AB	ANCHOR BOLT
ALUM	ALUMINUM
ANOD	ANODIZED
ARCH	ARCHITECT
B	
BM	BEAM
BN	BOUNDARY NAILING
BS	BOTH SIDES
BLDG	BUILDING
BRG	BEARING
BET	BETWEEN
C	
CLG	CEILING
CT	CERAMIC TILE
CLR	CLEAR COLUMN
COL	CONCRETE
CONC	CONCRETE MASONRY UNIT
CNU	CONSTRUCTION
CONST	CONTINUOUS
CONT	CONTRACT,
CONTR	CONTRACTOR
CJT	CONTROL JOINT
D	
DL	DEAD LOAD
DTL	DETAIL
DIAM	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DR	DOOR
DWG	DRAWING
DF	DRINKING FOUNTAIN
E	
EA	EACH
E	EAST
ELEC	ELECTRIC
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXP	EXPANSION
EJ	EXPANSION JOINT
EXT	EXTERIOR
F	
FOB	FACE OF BRICK
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FIN	FINISH
FEC	FIRE EXTINGUISHER/AND OR CABINET
FLG	FLASHING
FD	FLOOR DRAIN
FTG	FOOTING
FND	FOUNDATION
FBO	FURNISHED BY OTHERS
FRP	FIBER REINFORCED PANEL
G	
GA	GAUGE
GALV	GALVANIZED
GEN	GENERAL
GL	GLASS
GWB	GYPSUM WALL BOARD

H	
HDW	HARDWARE
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HWT	HOT WATER TANK
HR	HOUR
I	
IBC	INTERNATIONAL BUILDING CODE
INCL	INCLUDE, INCLUDED (ING)
ID	INSIDE DIAMETER
INSUL	INSULATE,INSULATION
INT	INTERIOR
J	
JAN	JANITOR
JC	JANITOR'S CLOSET
JT	JOINT
K	
KO	KNOCK OUT
L	
LBL	LABEL
LAM	LAMINATED
LAV	LAVATORY
LL	LIVE LOAD
M	
MFR	MANUFACTURER
MAS	MASONRY
MO	MASONRY OPENING
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N	
NOM	NOMINAL
N	NORTH
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
O	
OC	ON CENTER
OFF	OFFICE
OPG	OPENING
OPP	OPPOSITE
OD	OUTSIDE DIAMETER
O/O	OUT TO OUT
P	
PNT	PAINT, PAINTED
PNL	PANEL
PLAS	PLASTIC
P-LAM	PLASTIC LAMINATE
PL	PLATE
PLYWD	PLYWOOD
PVC	POLYVINYL CHLORIDE
PREFIN	PREFINISHED
PROP	PROPERTY

Q	
QUAN	QUANTITY
R	
RAD	RADIUS
RWL	RAIN WATER LEADER REFERENCE
REF	REINFORCE,
REINF	REINFORCEMENT
REQ'D	REQUIRED
REV	REVISION
R	RISER
RD	ROOF DRAIN
RM	ROOM
RO	ROUGH OPENING
S	
SCHED	SCHEDULE
SEC	SECTION
SHTG	SHEATHING
SIM	SIMILAR
S	SOUTH
SPEC	SPECIFICATION
SQ	SQUARE
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
T	
TEL	TELEPHONE
TV	TELEVISION
TEMP	TEMPERED
T&G	TONGUE AND GROOVE
TOB	TOP OF BRICK
TOS	TOP OF SLAB
TOW	TOP OF WALL
TOM	TOP OF MASONRY
T	TREAD
TYP	TYPICAL
U	
UBC	UNIFORM BUILDING CODE
UNO	UNLESS NOTED OTHERWISE
V	
VB	VAPOR BARRIER
VNR	VENEER
VERT	VERTICAL
VG	VERTICAL GRAIN
VCT	VINYL COMPOSITION TILE
W	
WSCT	WAINSCOT
WC	WATER CLOSET
WIN	WINDOW
WP	WATERPROOF (ING)
WRB	WEATHER RESISTANT BARRIER
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
WT	WEIGHT
W	WEST
W/	WITH

SITE LOCATION PLAN

SYMBOLS & MATERIALS

- STRUCTURAL FILL
- UNDISTURBED EARTH
- GRAVEL
- POURED CONCRETE
- CONCRETE BLOCK
- BRICK
- EIFS
- ROUGH WOOD
- BLOCKING
- FINISHED WOOD
- PLYWOOD
- RIGID INSULATION
- BATT INSULATION
- SAND, PLASTER, GROUT
- METAL
- STEEL
- NORTH ARROW
- WINDOW TYPE
- DOOR NUMBER
- ROOM NUMBER
- WALL TYPE
- REVISION NUMBER
- SECTION (XX / AX.X)
- ELEVATION (XX / AX.X)
- DETAIL (XX / AX.X)
- ITEM IDENTIFICATION (XX / AX.X)
- SHEET WHERE ITEM IS CUT

INDEX OF DRAWINGS

SHEET #	SHEET NAME	RELEASE DATE	LATEST REVISION
T0.0	TITLE SHEET	04/13/16	
C1.0	EXISTING SITE SURVEY		
C1.1	SITE AND UTILITY PLAN		
C1.2	SITE GRADING PLAN		
C2.0	GENERAL NOTES AND DETAILS		
C3.0	RETAINING WALL PLAN AND PROFILE		
A1.0	FLOOR PLAN AND CODE REVIEW		
A2.0	REFLECTED CEILING PLAND AND ROOF PLAN		
A4.0	EXTERIOR ELEVATIONS AND BUILDING SECTIONS		
A8.0	WALL SECTIONS, DETAILS AND SCHEDULES		
S0.0	STRUCTURAL NOTES		
S1.0	FOUNDATION PLAN		
S2.0	ROOF FRAMING PLAN		
S3.0	SHEAR PLAN		
MP0.0	MECHANICAL AND PLUMBING LEGENDS AND NOTES		
M1.0	HVAC FLOOR PLAN		
P1.0	PLUMBING FLOOR PLAN		
E0.0	ELECTRICAL LEGENDS AND NOTES		
E1.0	POWER AND LIGHTING PLANS		

ADD ALTERNATES: (X)

1. PROVIDE RETAINING WALL.

GENERAL CONDITIONS

1. THE GENERAL CONTRACTOR IS TO GUARANTEE ALL WORK INCLUDING WORK DONE BY SUBCONTRACTORS FOR A PERIOD OF ONE (1) YEAR COMMENCING WITH THE SUBSTANTIAL COMPLETION OF THE CONTRACT.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH ALL GOVERNING CODES, ORDINANCES AND AUTHORITIES HAVING JURISDICTION. GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL REQUIRED BUILDING PERMITS.
3. THE GENERAL CONTRACTOR IS TO HAVE A FULL TIME QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED.
4. ALL MATERIAL SPECIFIED IS TO BE NEW & INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. GENERAL CONTRACTOR IS TO CONSTRUCT PROJECT IN ACCORDANCE WITH THE DOCUMENTS. ANY DEVIATION FROM THE INTENT OF THE DOCUMENTS, WITHOUT ARCHITECT OR ENGINEER'S APPROVAL, ARE AT THE CONTRACTOR'S OWN RISK AND MAY RESULT IN THE WORK BEING DONE OVER AT CONTRACTOR'S EXPENSE (MATERIALS AND LABOR).

SYMBOLS USED AS ABBREVIATIONS

&	AND
L	ANGLE
@	AT
CL	CENTERLINE
u	CHANNEL
ø	DIAMETER
PL	PLATE

GENERAL NOTES

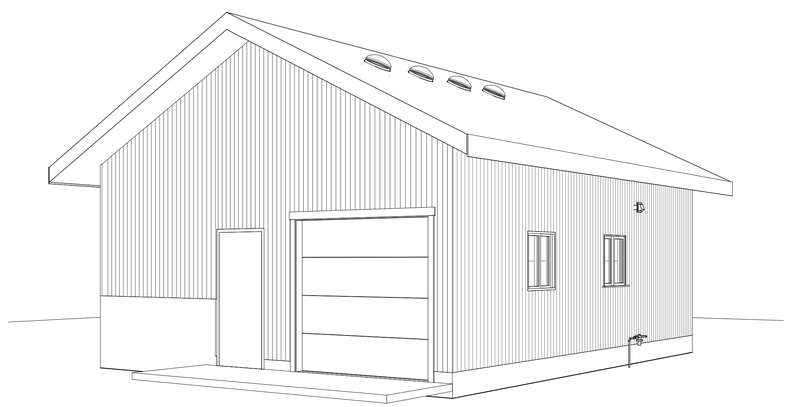
1. CONTRACTOR TO REVIEW AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK. ANY CONDITIONS NOT INDICATED ON CONTRACT DOCUMENTS ARE TO BE REPORTED TO THE ARCHITECT PRIOR TO BEGINNING WORK.
2. CONTRACTOR TO CONTACT LOCAL UTILITIES, IF NECESSARY, SUBMIT ALL APPLICABLE PERMIT DOCUMENTS, QUALIFICATIONS, ETC., AND BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH PERMITS, UTILITY EXTENSIONS, TAP-INS, ETC.
3. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AS A RESULT OF THIS PROJECT. THE CONTRACTOR WILL REMOVE EXISTING EQUIPMENT, FIXTURES, ETC. IN THE SPACE PRIOR TO CONSTRUCTION AND RELOCATE PER OWNER.
4. THE CONTRACTOR SHALL SCHEDULE HIS WORK AND MATERIAL AND EQUIPMENT DELIVERIES SO AS NOT TO INTERFERE WITH THE DAILY OPERATIONS OF THE REMAINDER OF THE FACILITY.
5. THE CONTRACTOR SHALL PROTECT EXISTING FACILITIES, EQUIPMENT, FIXTURES, ETC. FROM DAMAGE DURING THE COURSE OF CONSTRUCTION.
6. ALL SURFACES AND/OR FINISHES DAMAGED AS A RESULT OF AND ADJACENT TO THE WORK SHALL BE REPAIRED AND FINISHED TO THEIR ORIGINAL CONDITION.
7. EACH SUBCONTRACTOR IS RESPONSIBLE TO COORDINATE AND SCHEDULE HIS WORK WITH THE GENERAL CONTRACTOR AND ALL OTHER SUBCONTRACTORS WHOSE WORK WILL BE AFFECTED.
8. USE DETAILS MARKED 'TYPICAL' (TYP) WHEREVER APPLICABLE.
9. ALL ITEMS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS SHALL BE PERFORMED IN A WORKMANLIKE MANNER BY PERSONS SKILLED IN THEIR RESPECTIVE TRADE AND WHO NORMALLY PARTICIPATE IN THE WORK OF THAT TRADE.
10. WORDS WHICH HAVE WELL KNOWN TECHNICAL OR TRADE MEANINGS ARE USED IN THE DRAWINGS AND SPECIFICATIONS IN ACCORDANCE WITH SUCH RECOGNIZED MEANINGS.
11. WITHIN THE DRAWINGS AND RELATED SPECIFICATIONS THERE SHALL BE THE FOLLOWING PRECEDENCE:

A) ADDENDA OR MODIFICATIONS TO THE DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE OVER THE ORIGINAL, WHEN ISSUED BY THE ARCHITECT.

B) SPECIFICATIONS SHALL TAKE PRECEDENCE OVER DRAWINGS.

C) WITHIN THE DRAWINGS THE LARGER SCALE TAKES PRECEDENCE OVER THE SMALLER, FIGURED DIMENSIONS OVER SCALED AND NOTED MATERIALS OVER GRAPHIC INDICATIONS.

12. THE ARCHITECT OR ENGINEER SHALL BE IN THE FIRST INSTANCE THE SOLE INTERPRETER OF THE DRAWINGS AND SPECIFICATIONS WITH REGARD TO THEIR MEANING OR INTENT.
13. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY DURING BUILDING CONSTRUCTION.



VIEW FROM NORTHWEST

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LICENSED ARCHITECT
NED NIKO HATLING
3329
KALISPELL, MT
STATE OF MONTANA

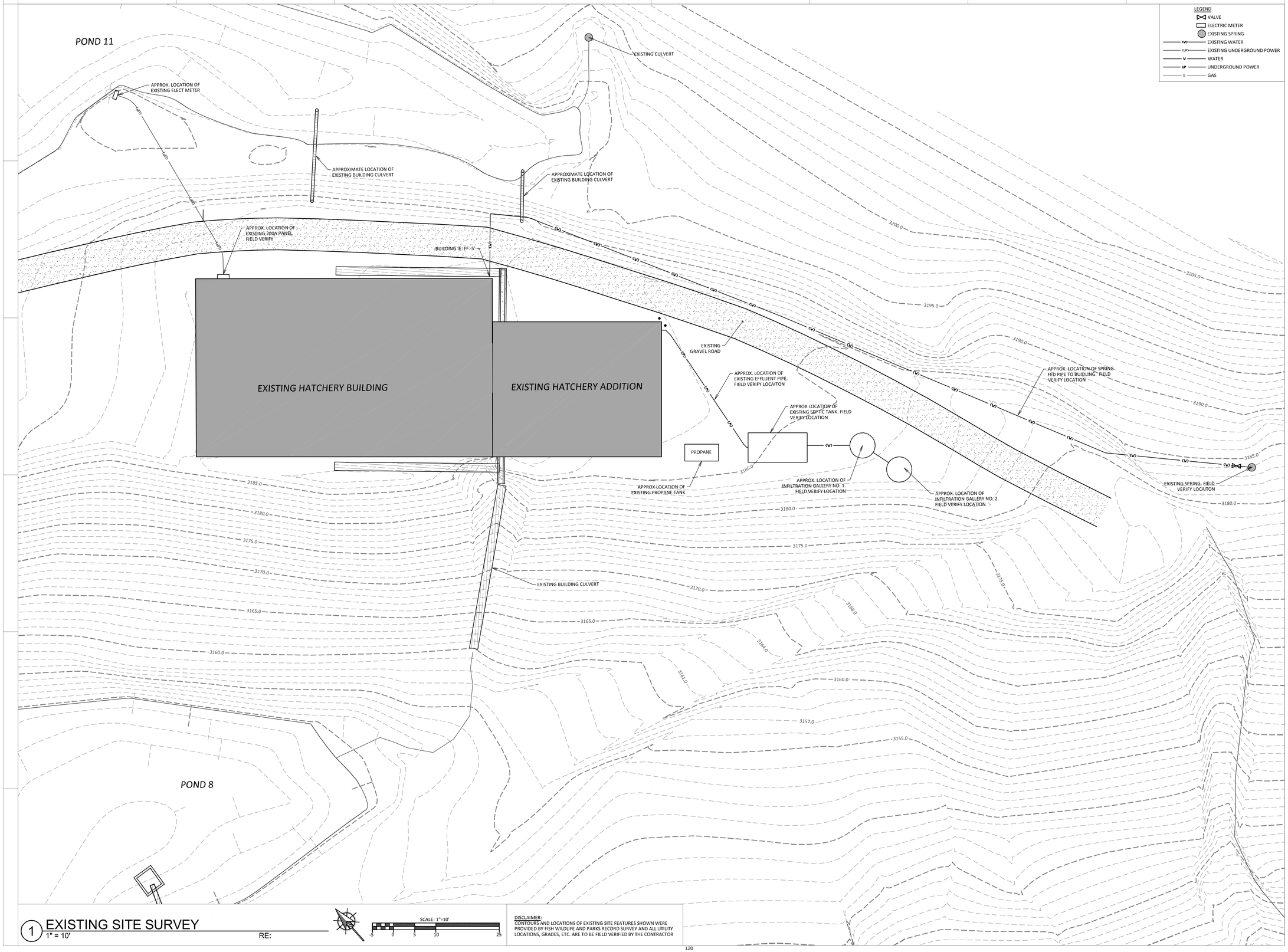
MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
TITLE SHEET

DRAWN: MKS
CHECKED: NNH
DATE: 04/13/16
JOB#: 160208

REVISIONS:

T0.0



1 EXISTING SITE SURVEY
1" = 10'

RE:

SCALE: 1"=10'
-5 0 5 10 25

DISCLAIMER:
CONTOURS AND LOCATIONS OF EXISTING SITE FEATURES SHOWN WERE PROVIDED BY FISH WILDLIFE AND PARKS RECORD SURVEY AND ALL UTILITY LOCATIONS, GRADES, ETC. ARE TO BE FIELD VERIFIED BY THE CONTRACTOR

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NEW FISH ISOLATION BUILDING
SEKOKNI SPRINGS FISH HATCHERY
5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
EXISTING SITE SURVEY

DRAWN:	EMS
CHECKED:	RAY
DATE:	04/13/16
SCALE	AS NOTED
JOB#:	160208

REVISIONS:

4/13/16

C1.0

1 SITE AND UTILITY PLAN
1" = 5'

RE:

NOTE:
STABILIZE AND RE-SEED ALL DISTURBED AREAS WITH NATIVE GRASSES MEETING FLATHEAD COUNTY GRASS SEED FOREST MIX. PROVIDE SEED MIX TO ENGINEER FOR APPROVAL.

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SEKOKINI SPRINGS FISH HATCHERY
5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
SITE AND UTILITY PLAN

DRAWN:	EMS
CHECKED:	RAY
DATE:	04/13/16
SCALE	AS NOTED
JOB#:	160208

REVISIONS:

4/13/16

C1.1

1 SITE GRADING PLAN
5 SCALE
RE:

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MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING

SEKOKINI SPRINGS FISH HATCHERY
535 BLANKENSHIP ROAD, WEST GLACIER, MT

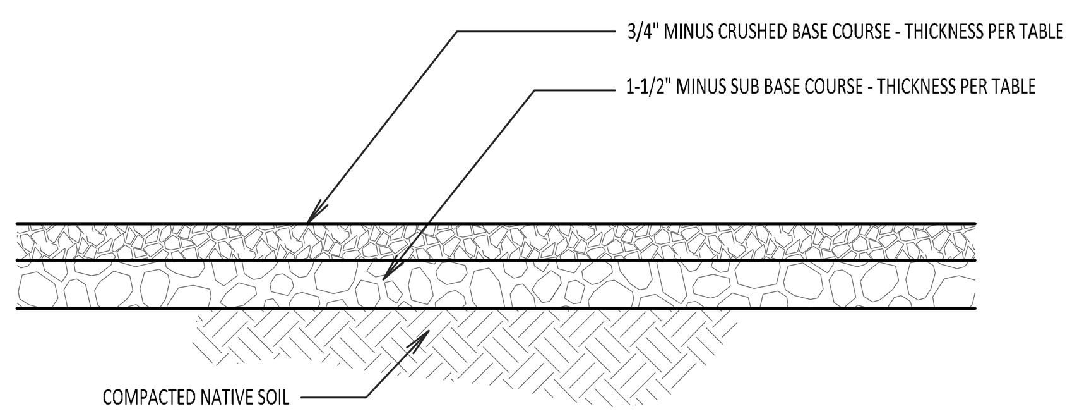
SHEET
SITE GRADING PLAN

DRAWN:	EMS
CHECKED:	RAY
DATE:	04/13/16
SCALE	AS NOTED
JOB#:	160208

REVISIONS:

4/13/16

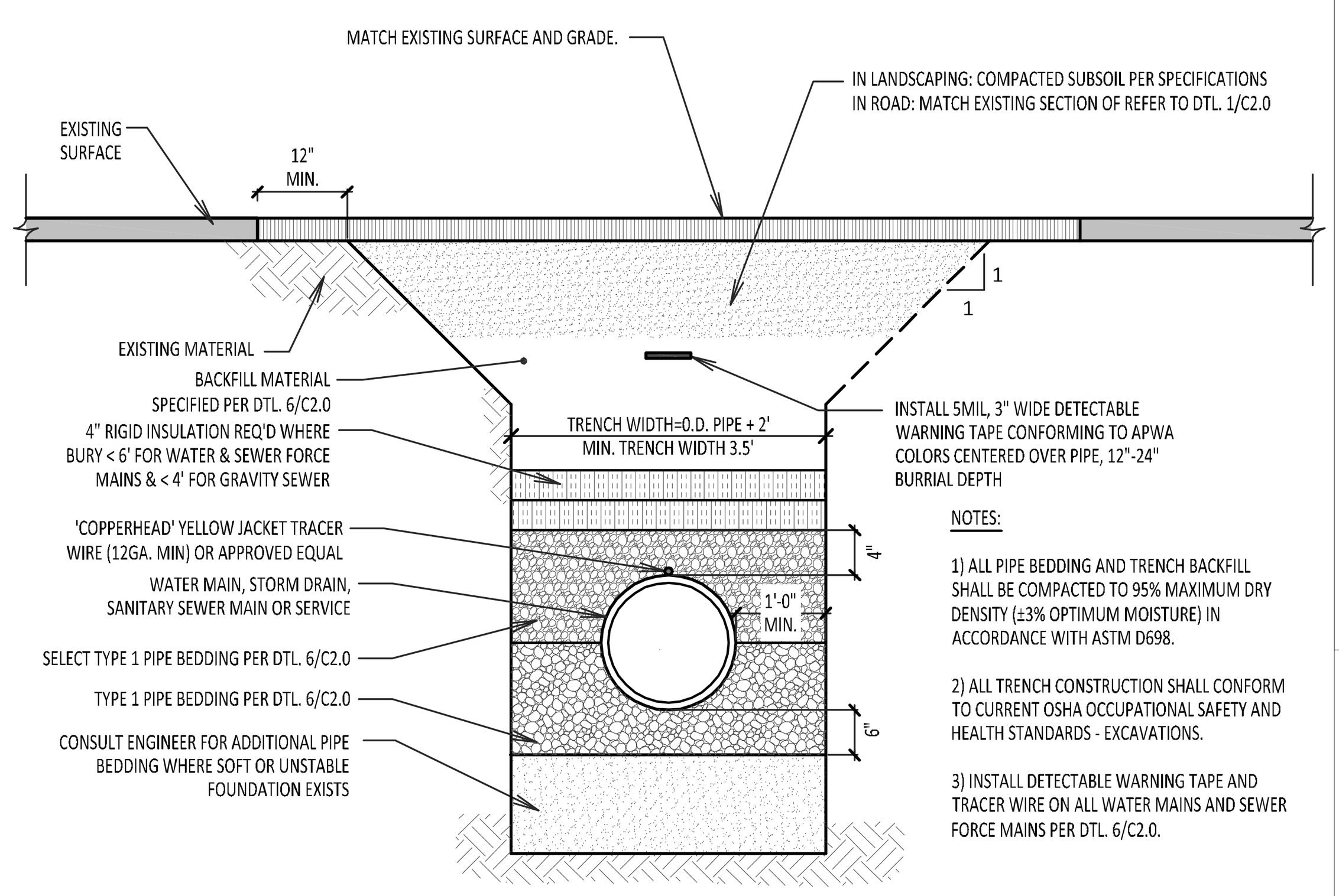
C1.2



PAVEMENT SECTIONS		
MATERIAL	LIGHT-DUTY	HEAVY-DUTY
ASPHALT	-	-
3/4" MINUS CRUSH AGGREGATE	3"	-
GEOTEXTILE	-	-
1-1/2" MINUS SUB BASE COURSE	6"	-
NATIVE	SEE NOTES	SEE NOTES

NOTE:
1. 3/4" CRUSHED AGGREGATE, 1-1/2" MINUS SUB BASE COURSE AND NATIVE SUBGRADE TO BE COMPACTED TO 95% DRY DENSITY PER ASTM D698

1 GRAVEL SECTION
3/8" = 1'-0" RE:



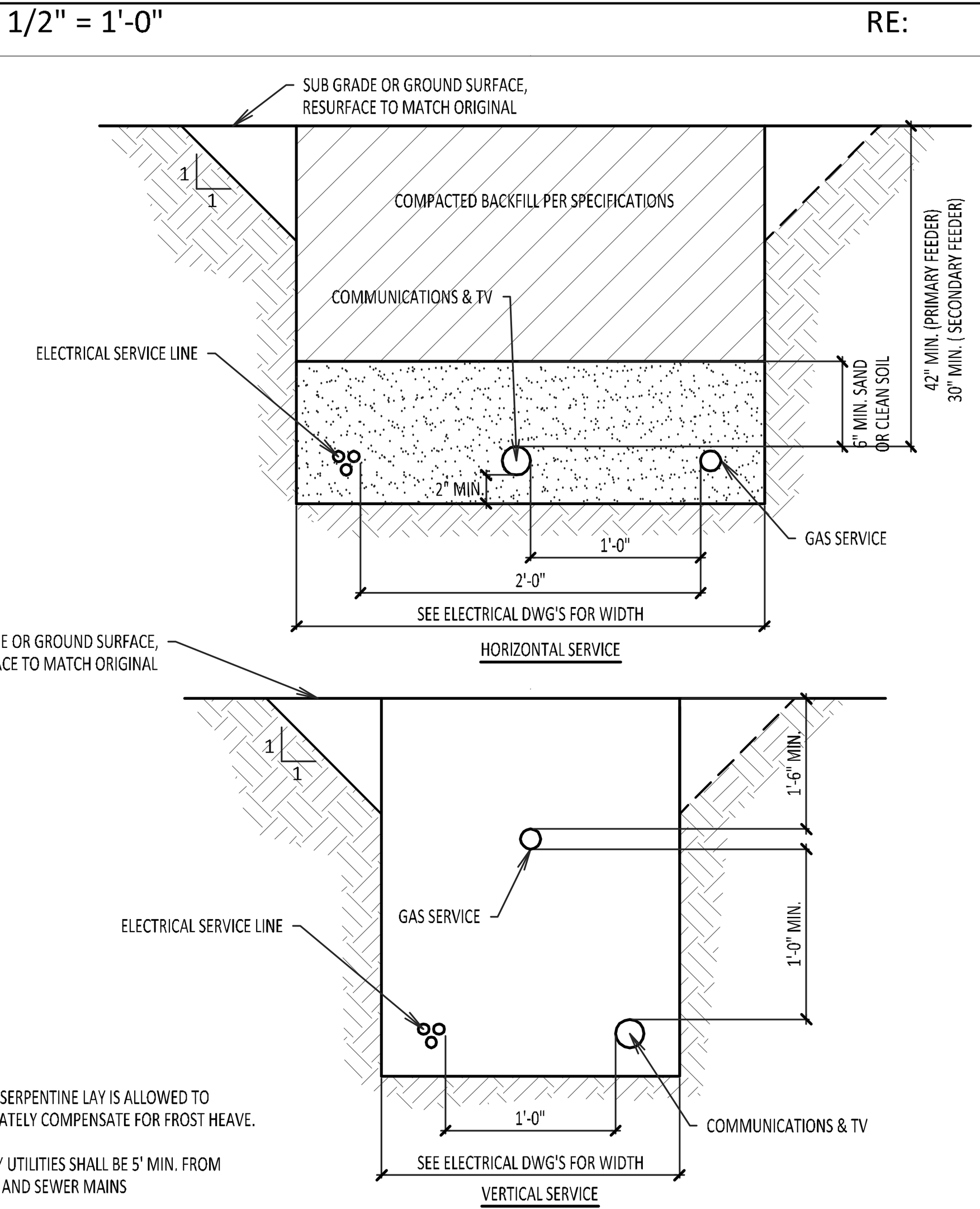
NOTES:

1) ALL PIPE BEDDING AND TRENCH BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY (±3% OPTIMUM MOISTURE) IN ACCORDANCE WITH ASTM D698.

2) ALL TRENCH CONSTRUCTION SHALL CONFORM TO CURRENT OSHA OCCUPATIONAL SAFETY AND HEALTH STANDARDS - EXCAVATIONS.

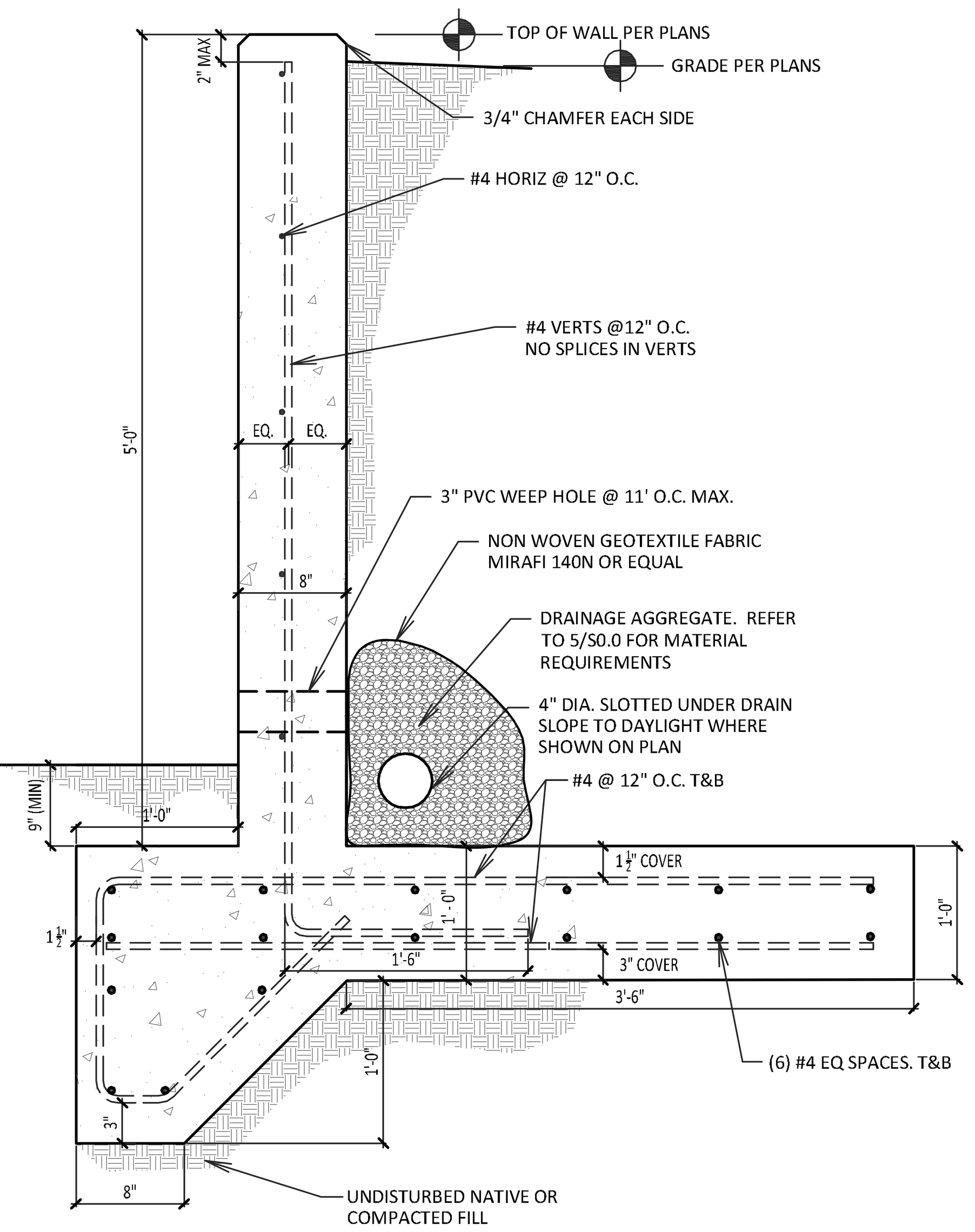
3) INSTALL DETECTABLE WARNING TAPE AND TRACER WIRE ON ALL WATER MAINS AND SEWER FORCE MAINS PER DTL. 6/C2.0.

2 UTILITY TRENCH SECTION
1/2" = 1'-0" RE:



NOTES:
1. SLIGHT SERPENTINE LAY IS ALLOWED TO ADEQUATELY COMPENSATE FOR FROST HEAVE.
2. ALL DRY UTILITIES SHALL BE 5' MIN. FROM WATER AND SEWER MAINS

3 ELECTRICAL TRENCH DETAIL
NTS RE:



4 RETAINING WALL DETAIL
1" = 1'-0" RE:

TABLE OF GRADATIONS

SUB-BASE

PERCENTAGES BY WEIGHT PASSING SQUARE MESH SIEVES

PASSING	4" MINUS	3" MINUS	2 1/2"MINUS	2" MINUS	1 1/2"MINUS
4 INCH	100				
3 INCH	---	100			
2 1/2 INCH	---	---	100		
2 INCH	---	---		100	
1 1/2 INCH	---	---	---	---	100
NO. 4 SIEVE	25-60	25-60	25-60	25-60	25-60
NO. 200 SIEVE	2-12	2-12	2-12	2-12	2-12

NOTES
1. A TOLERANCE OF 5 PERCENT, BY WEIGHT, UP TO THE NEXT ABOVE-SPECIFIED GRADATION (2 1/2-INCH FOR 2-INCH MAXIMUM) IS ALLOWED. THE MATERIAL PASSING THE MAXIMUM SCREEN OPENING AND RETAINED ON THE NO. 4 SIEVE SHALL BE REASONABLY WELL GRADED.
2. SUITABILITY OF THE AGGREGATE IS DETERMINED BY THE FINAL GRADATION REQUIRED IN THE CONTRACT DOCUMENTS, WITHIN THE ALLOWABLE LIMITS IN THE TABLE FOR THE PARTICULAR GRADING SPECIFIED.
3. ASSURE THE LIQUID LIMIT FOR THE FINE AGGREGATE PASSING A NO. 40 SIEVE DOES NOT EXCEED 25, NOR THE PLASTICITY INDEX EXCEED 6, AS DETERMINED BY AASHTO T89 AND T90.

CRUSHED BASE

PERCENTAGES BY WEIGHT PASSING SQUARE MESH SIEVES

PASSING	2" MINUS	1 1/2"MINUS	1" MINUS	3/4"MINUS	
2 INCH	100				
1 1/2 INCH	---	100			
1 INCH	---		100		
3/4 INCH	50-80	---	---	100	
1/2 INCH	---	---	---	---	
NO. 4 SIEVE	25-50	25-60	40-70	40-70	
NO. 10 SIEVE	---	---	25-55	25-55	
NO. 200 SIEVE	0-8	0-8	2-10	2-10	

NOTES
1. A TOLERANCE OF 5 PERCENT, BY WEIGHT, UP TO THE NEXT ABOVE-SPECIFIED GRADATION (2 1/2-INCH FOR 2-INCH MAXIMUM) IS ALLOWED. THE PRODUCED MATERIAL PASSING THE MAXIMUM SCREEN OPENING AND RETAINED ON THE NO. 4 SIEVE SHALL BE REASONABLY WELL GRADED IN ITS GRADING BETWEEN THOSE LIMITS WITHIN 5 PERCENT.
2. SUITABILITY OF THE AGGREGATE FOR ITS PARTICULAR USE IS DETERMINED BY THE FINAL GRADATION REQUIRED FOR GRADING. AS ESTABLISHED BY THE ENGINEER, WITHIN THE LIMITS ALLOWABLE IN THE TABLE FOR THE PARTICULAR GRADING SPECIFIED.
3. THAT PORTION OF THE FINE AGGREGATE PASSING THE NO. 200 SIEVE MUST BE LESS THAN 60 PERCENT OF THAT PORTION PASSING THE NO. 40 SIEVE.
4. THE LIQUID LIMIT FOR THAT PORTION OF THE FINE AGGREGATE PASSING A NO. 40 SIEVE CANNOT EXCEED 25, NOR THE PLASTICITY INDEX EXCEED 6, AS DETERMINED BY AASHTO T89 AND T90.

1. IN-PLACE FIELD DENSITY TESTS FOR QUALITY ASSURANCE ARE AT CONTRACTOR EXPENSE MEETING AASHTO T191 (ASTM D 1556), SAND CONE METHOD; OR AASHTO T238 (ASTM D2922) AND AASHTO T239 (ASTM D3017), NUCLEAR DENSOMETER METHODS. QUALITY ASSURANCE FIELD DENSITY TESTING FREQUENCY IS AT THE DISCRETION OF THE ENGINEER.
2. RETESTING OF FAILING AREAS IS AT THE EXPENSE OF THE CONTRACTOR.
3. QUALITY ASSURANCE TESTS WILL BE MADE BY THE CONTRACTOR FOR EACH ON-SITE NATURAL SOIL OR EACH SOURCE OF OFF-SITE MATERIAL, INCLUDING BORROW MATERIAL, TO DETERMINE THE LABORATORY MAXIMUM DENSITY VALUES AND OPTIMUM COMPACTION MOISTURE CONTENT UNDER AASHTO T99 OR ASTM D698.
4. SUBMIT TO THE ENGINEER RESULTS OF GRADATION TESTS FOR SUBEXCAVATION/REPLACEMENT BELOW SUBGRADE PITRUN GRAVEL/SAND. SUBMIT TO THE ENGINEER SAMPLES OF SOILS AND/OR AGGREGATES FOR LABORATORY MOISTURE-DENSITY RELATIONSHIP TESTING BY THE ENGINEER.
5. PERFORM CLEARING AND GRUBBING INCLUDING THE EXCAVATION, REMOVAL AND DISPOSAL OF ROOTS, STUMPS, SOD, OR ANY ORGANIC MATERIAL AND BURIED DEBRIS FROM WITHIN CONSTRUCTION LIMITS. REMOVE UNSUITABLE MATERIAL TO AT LEAST 12 INCHES (30cm) BELOW SUBGRADE ELEVATION.
6. STOCKPILE FOR PROJECT USE ANY TOPSOIL REMOVED BY CLEARING AND GRUBBING.
7. MEET OSHA REQUIREMENTS FOR EXCAVATIONS AND EXCAVATED MATERIAL STOCKPILES. THIS MAY REQUIRE DESIGN OF TEMPORARY SLOPES AND/OR SHORING BY LICENSED PROFESSIONAL ENGINEER.
8. TAKE PRECAUTIONS TO PROTECT ALL ADJOINING PRIVATE AND PUBLIC PROPERTY AND FACILITIES, INCLUDING UNDERGROUND AND OVERHEAD UTILITIES, CURBS, SIDEWALKS, DRIVEWAYS, STRUCTURES, FENCES, AND VEGETATION. ANY DISTURBED OR DAMAGED FACILITIES WILL BE SUITABLY RESTORED OR REPLACED CONSISTENT WITH CONDITION(S) WHICH EXISTED PRIOR TO CONSTRUCTION.
9. EXCAVATE TO THE SPECIFIED LINES AND GRADES. EXCAVATE WITHOUT CAUSING RUTTING, PUMPING OR OTHER DISTURBANCE TO UNDERLYING MATERIALS.
10. MAINTAIN THE SUBGRADE TO DRAIN AT ALL TIMES. CONSTRUCT SIDE DITCHES OR GUTTERS FROM CUTS TO EMBANKMENTS TO PREVENT EROSION DAMAGE TO EMBANKMENTS.
11. CONSTRUCT AND MAINTAIN TEMPORARY DRAINAGE WHERE EXISTING SURFACE DRAINAGE, SEWERS, OR UNDERDRAINAGE ARE DISTURBED DURING THE WORK UNTIL PERMANENT DRAINAGE FACILITIES ARE COMPLETED. PROTECT AND PRESERVE ALL EXISTING DRAINS, SEWERS, SUB-SURFACE DRAINS, CONDUITS, GAS LINES, AND OTHER UNDERGROUND STRUCTURES WHICH MAY BE AFFECTED BY THE WORK. REPAIR ALL DAMAGE TO THESE FACILITIES OR STRUCTURES RESULTING FROM THE WORK, TO THE SATISFACTION OF THE ENGINEER.
12. FURNISH DUST CONTROL MEETING JURISDICTIONAL REQUIREMENTS.
13. ASSURE THE SUBGRADE BENEATH PAVEMENTS, CURB, OR SIDEWALKS IS NATURAL SOIL FREE OF TOPSOIL, ORGANIC MATERIAL OR REFUSE. PLACE PAVEMENT COMPONENTS, CURB AND SIDEWALK OVER THE PREPARED SUBGRADE AS SOON AS PRACTICAL. DO NOT PLACE PAVEMENT COMPONENTS ON FROZEN SUBGRADE.
14. ASSURE THE FINISHED SURFACE DOES NOT DEVIATE NOT MORE THAN 0.1 FOOT (3cm) AT ANY POINT FROM THE STAKED ELEVATION; AND THAT THE SUM OF THE DEVIATIONS FROM TRUE GRADE OF ANY TWO POINTS LESS THAN 30 FEET (9m) APART DOES NOT EXCEED 0.1 FOOT (3cm).
15. COMPACT THE UPPER 8-INCHES (20cm) OF THE SUBGRADE TO AT LEAST 95% OF THE LABORATORY MAXIMUM, DETERMINED BY AASHTO T99 OR ASTM D698. PROOF ROLL THE SUBGRADE SURFACE FOR OBSERVATION BY THE ENGINEER.

16. IMMEDIATELY BEFORE PLACING THE BASE COURSE, BLADE SMOOTH AND SHAPE THE UNDERLYING SUBGRADE, SUB-BASE OR BASE COURSE TO THE PLAN CROSS SECTION BEFORE THE BASE COURSE IS PLACED ON THE STREET. DO NOT PLACE SUB-BASE COURSE ON WET OR MUDDY SUBGRADE OR SUB-BASE COURSE. MAINTAIN AT LEAST ONE COMPLETED BLOCK OF FINISHED AND ACCEPTED SUBGRADE OR SUB-BASE COURSE IN ADVANCE OF PLACING BASE COURSE.
17. MIX AND PLACE SUB-BASE & BASE COURSE IN MAXIMUM 6-INCH (15cm) HORIZONTAL LAYERS LOOSE THICKNESS. DEPOSIT AND SPREAD THE MATERIAL ON THE PREPARED SUBGRADE, OR ON A COMPLETED SUB-BASE OR BASE COURSE LAYER, AT THE POINT FARTHEST FROM THE POINT OF LOADING, PLACING CONTINUOUSLY WITHOUT BREAKS.
18. ASSURE HAULING OVER THE SUBGRADE OR OVER ANY COMPLETED SUB-BASE COURSE DOES NOT DAMAGE THE SUBGRADE, SUB-BASE OR BASE COURSE. SPREAD USING DUMP BOARDS, SPREADER BOXES, OR MOVING VEHICLES EQUIPPED TO DISTRIBUTE THE MATERIAL IN A UNIFORM LAYER OR A WINDROW.
19. ONCE THE BASE COURSE IS SPREAD, BLADE-MIX IT THE FULL DEPTH BY ALTERNATELY BLADING THE ENTIRE LAYER TO THE CENTERLINE AND BACK TO THE ROADWAY EDGE. FOR MULTIPLE LAYERS, MIX EACH LAYER AS SPECIFIED ABOVE. BLADE SMOOTH AND COMPACT EACH LAYER BEFORE PLACING THE SUCCEEDING.
20. UNIFORMLY ADD WATER TO THE MATERIAL AS NECESSARY TO PREVENT SEGREGATION.
21. COMPACT THE MATERIAL USING APPROVED TAMPING EQUIPMENT OR POWER ROLLERS. CORRECT ALL IRREGULARITIES OR DEPRESSIONS THAT DEVELOP UNDER ROLLING BY SCARIFYING THE MATERIAL AND ADDING OR REMOVING MATERIAL, AS REQUIRED, UNTIL THE SURFACE MEETS SPECIFICATIONS.
22. BLADE AND COMPACT ALTERNATELY, AS REQUIRED TO PRODUCE THE SPECIFIED SURFACE UNTIL FINAL INSPECTION. TAMP THE MATERIAL ALONG CURBS, HEADERS, MANHOLES, AND SIMILAR STRUCTURES AND ALL PLACES INACCESSIBLE TO ROLLERS USING APPROVED MECHANICAL TAMPERS OR HAND TAMPERS MEET DENSITY AND COMPACTION REQUIREMENTS.
23. FURNISH WATERING AND ROLLING TO OBTAIN A MINIMUM 95 PERCENT FIELD DENSITY OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO T99. EACH LIFT WILL BE PROOF ROLLED FOR STABILITY.
24. FINISH THE SUB-BASE COURSE SO THAT WHEN TESTED USING A 10-FOOT (3m) TEMPLATE PLACED ON THE SURFACE WITH ITS CENTER LINE PARALLEL TO THE STREET CENTER, THE MAXIMUM SURFACE DEVIATION FROM STRAIGHT EDGE DOES NOT EXCEED 1/2-INCH (12.7mm). ADDITIONALLY, THE FINISHED GRADE CANNOT DEVIATE MORE THAN 0.1 FOOT (30.48 mm) AT ANY POINT FROM THE STAKED ELEVATION AND THE SUM OF THE DEVIATIONS FROM TWO POINTS NOT MORE THAN 30 FEET (9.14m) APART CANNOT EXCEED 0.1 FEET (3048mm).
25. PROVIDE THE WATERING AND ROLLING OF BASE COURSE REQUIRED TO OBTAIN A MINIMUM FIELD DENSITY OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T99.
26. THE SURFACE OF ANY BASE COURSE, WHEN FINISHED AND TESTED WITH A 10-FOOT (3.0m) TEMPLATE PLACED ON THE SURFACE WITH ITS CENTER LINE PARALLEL TO THE CENTER LINE OF THE STREET, NOT HAVE A SURFACE DEVIATION FROM THE STRAIGHT EDGE EXCEEDING 3/8-INCH (1.0cm). ADDITIONALLY, THE FINISHED GRADE CANNOT DEVIATE MORE THAN 0.05 FEET (1.5cm) AT ANY POINT FROM THE STAKED ELEVATION, AND FURTHER, THE SUM OF THE DEVIATIONS FROM TWO POINTS NOT MORE THAN 30 FEET (9.0m) APART CANNOT EXCEED 0.05 FEET (1.5cm).
27. USE UNCONTAMINATED WATER WHEN WATERING.
28. APPLY WATER, WHEN REQUIRED, AT THE LOCATIONS AND IN THE AMOUNTS REQUIRED TO COMPACT THE MATERIAL TO THE SPECIFIED REQUIREMENTS. MAINTAIN AN ADEQUATE WATER SUPPLY DURING THE WORK. ASSURE THE EQUIPMENT USED FOR WATERING IS OF THE CAPACITY AND DESIGN TO PROVIDE UNIFORM WATER APPLICATION.
29. APPLY WATER DURING THE WORK TO CONTROL DUST AND TO MAINTAIN ALL EMBANKMENT AND BASE COURSES IN A DAMP CONDITION.

5 GENERAL ROAD CONSTRUCTION NOTES
1" = 1" RE:

1. IN PLACE FIELD DENSITY TESTS SHALL BE COORDINATED BY CONTRACTOR, AND PAID FOR BY CONTRACTOR FOR QUALITY ASSURANCE MEETING AASHTO T191 (ASTM D1550) SAND CONE METHOD OR AASHTO T238 AND T239 (ASTM D2922 & D3017) NUCLEAR DENSOMETER METHODS OF ALL BACKFILLING OF TRENCHES.
2. FIELD DENSITY TESTING SHALL BE PERFORMED ON TRENCH BACKFILL FOR EVERY SERVICE LINE INSTALLED OR (1) TEST PER 120 LF WHICHEVER IS GREATER.
   2.1. AT A MINIMUM (1) TEST SHALL BE PERFORMED IN EACH BEDDING OR BACKFILL MATERIAL
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RE-TESTING REQUIRED FOR QUALITY ASSURANCE AS A RESULT OF FIRST TEST NOT PASSING REQUIREMENTS.
4. CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR REQUIRED TO PROVIDE TESTING OF MATERIALS BELOW THE SURFACE THAT WERE COVERED PRIOR TO PROPER QUALITY ASSURANCE AS TESTED IN ITEM 1.
5. TESTS SHALL BE CONDUCTED FOR NATURAL MATERIALS AND OFF-SITE MATERIAL TO DETERMINE THE MAXIMUM DENSITY VALVES AND OPTIMUM COMPACTION MOISTURE CONTENT ACCORDING TO AASHTO T-99 OR ASTM D698
6. SUBMIT RESULTS OF TESTING TO ENGINEER.
7. REFERRING TO THE TRENCH DETAIL
   7.1. TYPE 1 PIPE BEDDING INCLUDES THE MATERIAL PLACED FROM 4 INCHES (100mm) BELOW THE BOTTOM OF THE PIPE, AROUND THE PIPE, AND UP TO THE SPRINGLINE OF THE PIPE. PROVIDE TYPE 1 BEDDING CONSISTING OF 3/4 INCH MAX. CRUSHED GRAVEL AND A MAXIMUM PLASTICITY INDEX OF 6, DETERMINED BY AASHTO T89 AND T90 OR BY ASTM D4318. WHERE TRENCH EXCAVATION ENCOUNTERS WET OR UNSTABLE MATERIAL , TYPE 1 PIPE BEDDING MUST BE FREE DRAINING AND NONPLASTIC. SUBMIT TYPE 1 GRADATION TO ENGINEER FOR APPROVAL.
8. REFERRING TO THE TRENCH DETAIL
   8.1. SELECT TYPE 1 BEDDING INCLUDES THE MATERIAL PLACED FROM THE SPRINGLINE OF THE PIPE TO 6 INCHES (15cm) OVER THE PIPE. SELECT TYPE 1 BEDDING SHALL CONSIST OF 3/4" MAX CRUSHED GRAVEL. EXCAVATED TRENCH MATERIAL MAY BE SCREENED OR SORTED FOR USE AS BACKFILL SUBJECT TO APPROVAL OF THE ENGINEER. WHERE TRENCH EXCAVATION ENCOUNTERS WET OR UNSTABLE MATERIAL, SELECT TYPE 1 BEDDING MUST BE FREE DRAINING AND NONPLASTIC.
9. TYPE 2 PIPE BEDDING IS USED AS DIRECTED BY THE ENGINEER TO REPLACE UNSUITABLE MATERIAL ENCOUNTERED IN THE TRENCH BOTTOM. PLACE TYPE 2 PIPE BEDDING FROM THE BOTTOM OF THE TYPE 1 BEDDING MATERIAL TO THE DEPTH REQUIRED TO ADEQUATELY SUPPORT THE PIPE. THE TYPE 2 BEDDING CONSISTS OF GRANULAR MATERIAL MEETING THE FOLLOWING GRADATION. 3 INCH SIEVE OPENING REQUIRES 100 % PASSING. NO. 4 SIEVE OPENING REQUIRES 0-25 % PASSING. NO.8 SIEVE OPENING REQUIRES 1-10 % PASSING.
10. BACKFILL MATERIAL CAN BE OBTAINED FROM TRENCH EXCAVATIONS BUT MUST BE FREE OF CINDERS, ASH, REFUSE, ORGANIC OR FROZEN MATERIAL, BOULDERS, OR OTHER DELETERIOUS MATERIALS.
11. DETECTABLE BURIED WARNING TAPE, WHICH SHALL BE USED ON ALL UTILITIES, IS TO HAVE A MINIMUM 6 INCH (15cm) WIDTH AND 5 MIL (0.12mm) THICKNESS AND A SOLID ALUMINUM CORE RUNNING THE FULL LENGTH AND WIDTH OF THE TAPE ENCLOSED IN A COLOR CODED INERT PLASTIC JACKET, IMPERVIOUS TO ALKALIS, CHEMICAL REAGENTS SOLVENTS IN THE SOIL. THE TAPE IS TO MEET APWA/ULCC COLOR CODE REQUIREMENTS AND IS TO HAVE A MAXIMUM 36 INCH (90cm) IMPRINT. ALSO PROVIDE A CONTINUOUS LOOP OF 14 GAUGE STRANDED COPPER INSULATED TRACER WIRE.
12. TAKE PRECAUTIONS TO PROTECT ALL ADJOINING PRIVATE AND PUBLIC PROPERTY AND FACILITIES, INCLUDING UNDERGROUND AND OVERHEAD UTILITIES, CURBS, SIDEWALKS, DRIVEWAYS, STRUCTURES, AND FENCES. RESTORE OR REPLACE ALL DISTURBED OR DAMAGED FACILITIES TO ITS ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE
13. PROTECT THE UTILITIES EXPOSED DURING THE WORK AND PREVENT DAMAGING UNDERGROUND UTILITIES ADJACENT TO EXCAVATIONS. IMMEDIATELY NOTIFY THE UTILITY OWNER OF ANY CONSTRUCTION DAMAGE. REPAIRS OF DAMAGE TO MARKED UTILITIES ARE AT THE EXPENSE OF THE CONTRACTOR.
14. PROTECT EXISTING WATER AND SEWER MAINS AND WATER AND SEWER SERVICES FROM FREEZING AT ALL TIMES DURING CONSTRUCTION.
15. PREVENT DAMAGE TO EXISTING BUILDINGS OR STRUCTURES IN THE WORK AREA. REPAIR ALL CONSTRUCTION RELATED DAMAGE TO THE SATISFACTION OF THE OWNER.
16. USE EXTREME CAUTION TO AVOID CONFLICT, CONTACT OR DAMAGE TO OVERHEAD UTILITIES DURING THE WORK.
17. THE LOCATION OF EXISTING BURIED PUBLIC UTILITIES MAY NEED TO BE VERIFIED BY EXPLORATORY EXCAVATION BEFORE CONSTRUCTION. WHERE AUTHORIZED BY THE ENGINEER, THE CONTRACTOR WILL BE REIMBURSED FOR EXPLORATORY EXCAVATION WORK AT A UNIT PRICE PER HOUR FOR A BACKHOE/EXCAVATOR WITH OPERATOR AND A LABORER TO ASSIST.
18. WHERE TRENCH EXCAVATION OR APPURTENANT STRUCTURE EXCAVATION REQUIRES REMOVING CURB AND GUTTER, CONCRETE SIDEWALKS, ASPHALT CONCRETE PAVEMENT, OR PORTLAND CEMENT CONCRETE PAVEMENT, CUT THE CONCRETE OR PAVEMENT IN A STRAIGHT LINE PARALLEL TO THE EXCAVATIONS EDGE USING A SPADEBITTED AIR HAMMER, CONCRETE SAW OR OTHER SUITABLE EQUIPMENT TO PRODUCE A STRAIGHT, SQUARE AND CLEAN BREAK.
19. WHEN EXCAVATING ACROSS EXISTING GRAVEL STREETS OR OTHER DEVELOPED SURFACES, REMOVE THE SURFACING MATERIAL FULL DEPTH AND STOCKPILE FOR INCLUSION AS TRENCH BACKFILL OR LEGALLY DISPOSE OF THE SURFACING MATERIAL.
20. WHEN EXCAVATING ACROSS CULTIVATED OR SODDED AREAS, REMOVE TOPSOIL FULL DEPTH OR TO A MAXIMUM 12 INCH (30cm) DEPTH, WHICHEVER IS LESS, AND STOCKPILE FOR POSSIBLE PROJECT USE.
21. RE-SOD OR RESEED, ALL ESTABLISHED LAWN AREAS CUT BY TRENCHING OR DAMAGED DURING THE CONSTRUCTION.
22. MAINTAIN THE FLOW OF SEWERS, DRAINS AND WATER COURSES ENCOUNTERED DURING CONSTRUCTION. RESTORE CULVERTS, DITCHES, FENCES, CROSSWALKS AND STRUCTURES DISTURBED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION UPON COMPLETION OF THE WORK.
23. MEET CURRENT OSHA SAFETY AND HEALTH STANDARDS FOR ALL EXCAVATION, TRENCHING, SHORING, AND RELATED WORK.
24. DURING EXCAVATION, STOCKPILE BACKFILL MATERIALS AWAY FROM THE TRENCH BANKS TO ASSURE TRENCH WALL STABILITY. STOCKPILE EXCAVATED MATERIALS ON ONLY ONE SIDE OF THE TRENCH WITHOUT OBSTRUCTING EXISTING FIRE HYDRANTS, VALVES, MANHOLES AND OTHER APPURTENANCES. ASSURE SURFACE DRAINAGE OF ADJOINING AREAS IS UNOBSTRUCTED.
25. REMOVE AND DISPOSE OF ALL EXCESS OR UNSUITABLE EXCAVATED MATERIALS.
26. PREVENT SURFACE WATER FROM FLOWING INTO EXCAVATIONS. PROMPTLY REMOVE ALL WATER ACCUMULATING IN TRENCH EXCAVATIONS. DO NOT PERMIT WATER TO ACCUMULATE IN ANY OPEN TRENCH. REMOVE AND RE-LAY ALL PIPE OUT OF ALIGNMENT OR GRADE CAUSED BY TRENCH FLOODING.
27. GRADE THE TRENCH BOTTOMS TO THE SPECIFIED LINES AND GRADES. ASSURE BEDDING MATERIAL PROVIDES UNIFORM BEARING AND SUPPORT FOR EACH PIPE SECTION ALONG ITS ENTIRE LENGTH. EXCAVATE FOR BELL AND JOINTS AFTER THE TRENCH BEDDING IS GRADED , LIMITING THE EXCAVATION TO THE REQUIRED LENGTH, DEPTH AND WIDTH FOR MAKING THE PARTICULAR TYPE OF JOINT USED. BACKFILL OVER-EXCAVATIONS WITH TYPE 2 BEDDING MATERIAL.
28. EXCAVATE TO PROVIDE ROOM TO INSTALL AND JOIN THE PIPE AS SPECIFIED. THE MINIMUM TRENCH WIDTH IS 3'-6" (1.1m), FOR OUTSIDE PIPE DIAMETERS OF 18 INCHES (0.5m) OR LESS. THE MINIMUM TRENCH WIDTH IS 2'-0" (0.6m) PLUS THE OUTSIDE PIPE DIAMETER, FOR PIPE SIZES EXCEEDING 18 INCHES (0.5m).
29. EXCAVATE THE TRENCH AS REQUIRED FOR THE INVERT GRADE OR PIPE BURY AS SPECIFIED IN THE DOCUMENTS, PLUS 4 INCHES (10cm) FOR THE TYPE 1 PIPE BEDDING. IF BEDROCK, BOULDERS OR LARGE STONES ARE ENCOUNTERED AT THE BOTTOM OF THE TRENCH, EXCAVATE AT LEAST 6 INCHES (15cm) BELOW THE BOTTOM OF THE PIPE FOR BACKFILLING WITH TYPE 1 PIPE BEDDING.
30. WHEN SOFT OR UNSTABLE MATERIAL IS ENCOUNTERED AT THE TRENCH SUBGRADE WHICH WILL NOT UNIFORMLY SUPPORT THE PIPE, EXCAVATE THE MATERIAL TO THE DEPTH DIRECTED BY THE ENGINEER AND BACKFILL TO TRENCH SUBGRADE ELEVATION WITH TYPE 2 PIPE BEDDING.
31. EQUIP ALL TRACK MOUNTED EQUIPMENT OPERATED ON PAVEMENT WITH TRACK PADS. RETURN ASPHALT DAMAGED BY CONSTRUCTION TO ITS ORIGINAL CONDITION.
32. PROVIDE ALL SHORING, BRACING AND TIGHT SHEETING REQUIRED TO PREVENT CAVING AND PROTECT WORKERS, MEETING CURRENT OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS, AND TO PROTECT ADJACENT PROPERTY AND STRUCTURES. THE COST OF THIS WORK IS INCLUDED IN THE COST FOR TRENCH EXCAVATION.
33. MAKE EXCAVATIONS FOR MANHOLES, HYDRANTS, STRUCTURES AND OTHER APPURTENANCES OF THE SIZE AND DEPTH TO TO PERMIT COMPACTING OF BACKFILL ON ALL SIDES TO THE SPECIFIED DENSITY.
34. REMOVE ALL GROUND WATER ENCOUNTERED IN TRENCH EXCAVATIONS. DO NOT PLACE PIPE, BEDDING OR BACKFILL MATERIALS BELOW THE GROUNDWATER ELEVATION ESTABLISHED BY DEWATERING OPERATIONS. THE COST OF DEWATERING OPERATIONS IS CONSIDERED A PART OF THE EXCAVATION COST.
35. THE STABILITY OF CONSTRUCTION EXCAVATIONS AND ASSOCIATED WORKER SAFETY, INCLUDING SLOPE GEOMETRY AND SHORING/BRACING CONSIDERATIONS, ARE THE RESPONSIBILITY OF THE CONTRACTOR. MEET CURRENT OSHA REGULATIONS. THIS MAY REQUIRE DESIGN OF TEMPORARY SLOPES AND/OR SHORING BY A LICENSED PROFESSIONAL ENGINEER.
36. BACKFILL ALL TRENCHES AS SPECIFIED IMMEDIATELY AFTER GRADE, ALIGNMENT AND PIPE JOINTING HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER. CONDUCT ANY PIPE TESTING AS SPECIFIED IN THE RESPECTIVE WATER, SEWERAGE/DRAINAGE SECTIONS. CORRECT ALL DEFECTS DISCOVERED BY TESTS.
37. AFTER THE PIPE BEDDING MATERIALS ARE PLACED AND COMPACTED AS SPECIFIED, BACKFILL THE TRENCH. USE BACKFILL MATERIAL FREE OF CINDERS, ASH, REFUSE, ORGANIC OR FROZEN MATERIAL, BOULDERS, OR OTHER DELETERIOUS MATERIALS. FROM THE TOP OF THE SELECT TYPE 1 PIPE BEDDING TO 6 INCHES (15cm) BELOW THE GROUND SURFACE, OR THE SUBGRADE, OR THE SUBGRADE ELEVATION, MATERIAL CONTAINING ROCK UP TO 8 INCHES (20cm) IN THE GREATEST DIMENSION MAY BE USED.
38. PLACE AND COMPACT BACKFILL FOR APPURTENANCES TO FINISHED GRADE AROUND MANHOLES, INLETS, VALVE BOXES AND OTHER UNDERGROUND ITEMS WITHOUT DISTURBING APPURTENANCE ALIGNMENTS. MEET THE BACKFILL MATERIAL, PLACEMENT, AND COMPACTION REQUIREMENTS SPECIFIED FOR THE ADJOINING TRENCH.
39. PROTECT ALL SURVEY MARKERS AND MONUMENTS. PROTECTION INCLUDES MARKING WITH FLAGGED HIGH LATH AND SUPERVISING WORK NEAR MARKERS AND MONUMENTS.
40. REPLACE ALL CONTRACTOR DISTURBED OR DESTROYED SURVEY MARKERS OR MONUMENTS, NOT APPROVED DURING CONSTRUCTION, USING A LICENSED LAND SURVEYOR.
41. AS WORK PROGRESSES, REMOVE DEBRIS AND COMPLETE TO FINISH GRADE EACH PORTION OF THE WORK. ONCE THE WORK IS COMPLETE, CLEAR DEBRIS AND FINISH THE ENTIRE SITE TO SMOOTH, UNIFORM SLOPES PRESENTING A NEAT AND WORKMANLIKE APPEARANCE. REMOVE AND DISPOSE OF ALL ROCKS BROUGHT TO THE SURFACE DURING EXCAVATION OR BACKFILLING.

6 GENERAL TRENCH EXCAVATION NOTES
NOT TO SCALE RE:

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MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
GENERAL NOTES AND DETAILS

DRAWN:	EMS
CHECKED:	RAY
DATE:	04/13/16
SCALE	AS NOTED
JOB#:	160208

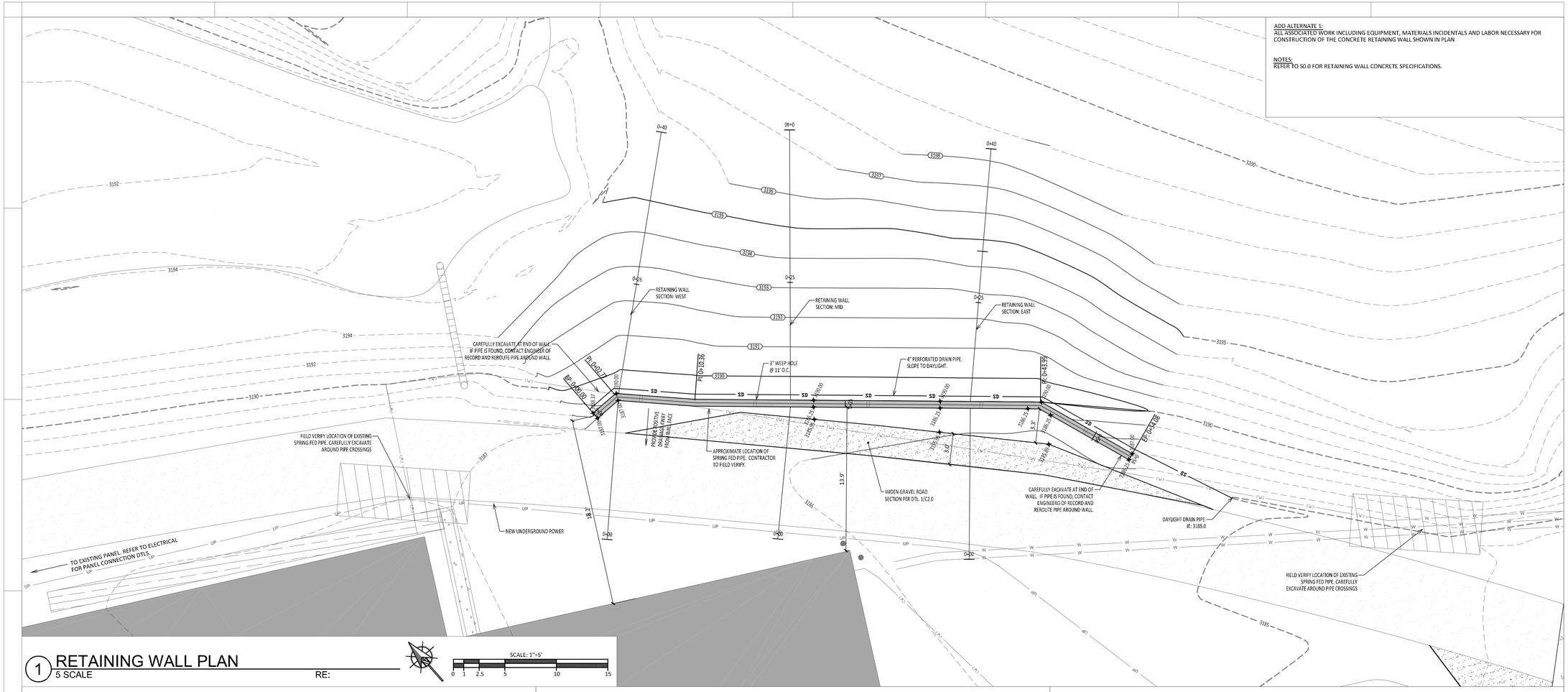
REVISIONS:

4/13/16

C2.0

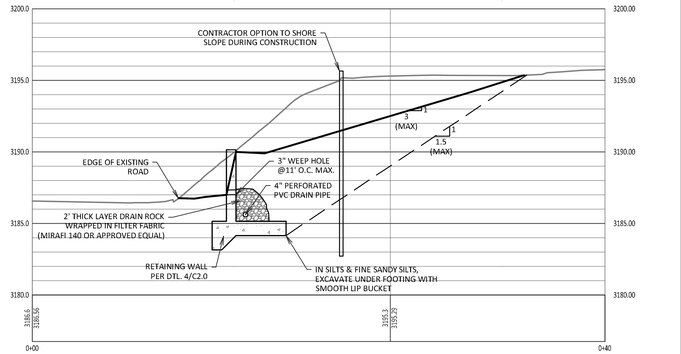
ADD ALTERNATE 1:
ALL ASSOCIATED WORK INCLUDING EQUIPMENT, MATERIALS INCIDENTALS AND LABOR NECESSARY FOR CONSTRUCTION OF THE CONCRETE RETAINING WALL SHOWN IN PLAN

NOTES:
REFER TO S0.0 FOR RETAINING WALL CONCRETE SPECIFICATIONS.

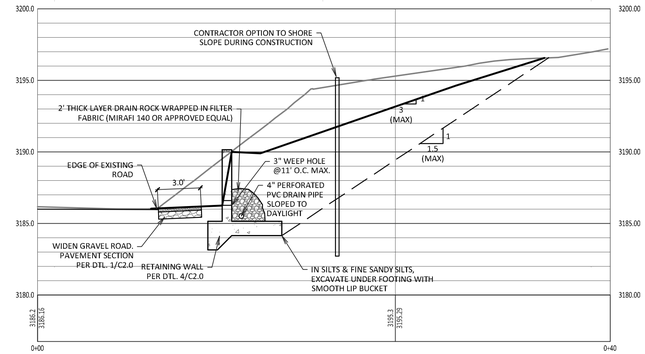


1 RETAINING WALL PLAN
5 SCALE RE:

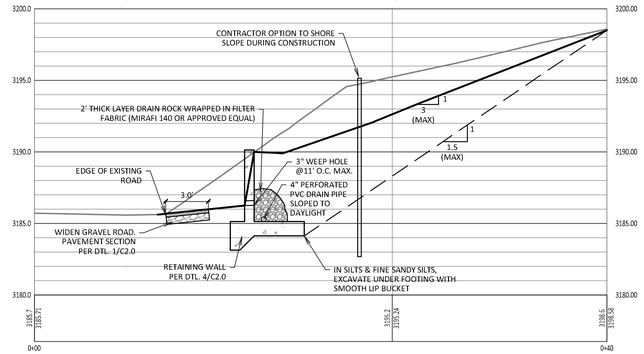
SCALE: 1"=5'
0 1 2.5 5 10 15



2 RETAINING WALL SECTION WEST
1" = 5" RE:



3 RETAINING WALL SECTION MID
1" = 5" RE:



4 RETAINING WALL SECTION EAST
1" = 5" RE:

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SEKOKINI SPRINGS FISH HATCHERY
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SHEET
RETAINING WALL PLAN AND PROFILE

DRAWN: JSS
CHECKED: RAY
DATE: 04/13/16
SCALE AS NOTED
JOB#: 160208

REVISIONS:

4/13/16

C3.0

INTERNATIONAL BUILDING CODE 2012

USE AND OCCUPANCY CLASSIFICATION (CHAPTER 3):
UTILITY: U

GENERAL BUILDING HEIGHTS AND AREAS (CHAPTER 5):
OCC. CLASSIFICATION U:
REQUIRED MAX: 1 STORY, 40 FEET, 5,500 SF
ACTUAL: 1 STORY, 20 FEET, 720 SF

TYPE OF CONSTRUCTION (CHAPTER 6): VB
MINIMUM FIRE SEPARATION DISTANCE: >10FT = 0 HR RATING

MEANS OF EGRESS (CHAPTER 10):
1004.1.2 OCCUPANT LOAD:
AGRICULTURAL BUILDING: 300 OCC. LOAD FACTOR
AREAS: (GROSS SF/OCC): 720/300 = 2.4
TOTAL OCCUPANT LOAD: 3 OCCUPANTS

COMMON PATH OF EGRESS TRAVEL: U: 100' (MAX)
EXIT ACCESS TRAVEL DISTANCE: 300' (MAX)

1013.2 GUARDS ARE NOT REQUIRED AT WALKING SURFACES WITH A DROP OFF OF LESS THAN 30"

ACCESSIBILITY (CHAPTER 11):
1103.2.5 UTILITY BUILDINGS ARE EXEMPT FROM ACCESSIBILITY REQUIREMENTS EXCEPT AGRICULTURAL BUILDINGS ARE REQUIRED TO HAVE ACCESS TO PAVED WORK AREAS.
1103.2.9 SPACES FREQUENTED FOR MAINTENANCE PURPOSES ONLY ARE NOT REQUIRED TO BE ACCESSIBLE.

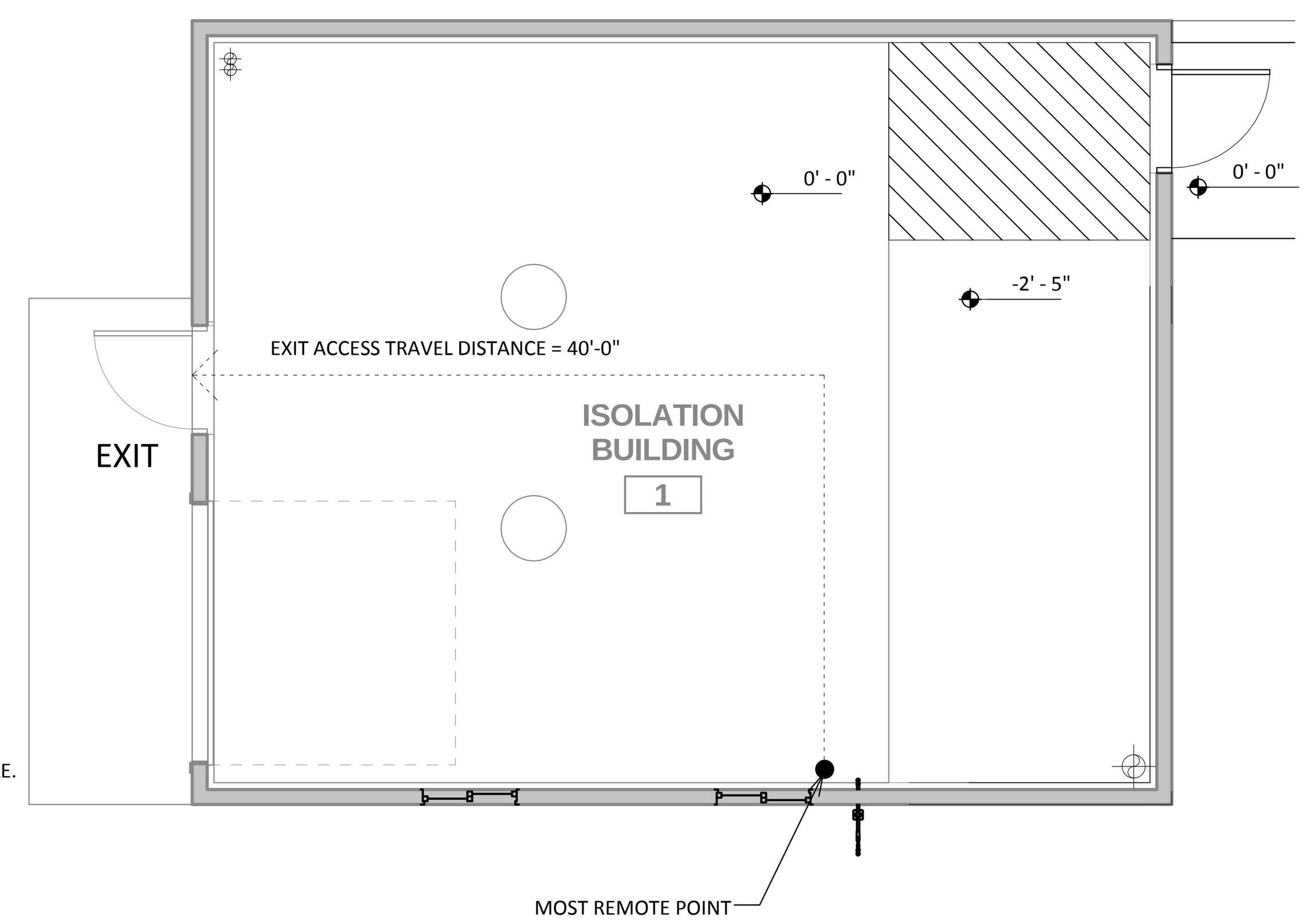
INTERIOR ENVIRONMENT (CHAPTER 12):
1203.4 NATURAL VENTILATION REQUIRED TO BE NOT LESS THAN 4% OF BUILDING AREA

ENERGY EFFICIENCY (CHAPTER 13):
2012 IECC
WALL R-VALUE: (WOOD FRAMED) SPRAY FOAM INSULATION R-21 MIN.
ROOF: ATTIC INSULATION R-49
UNHEATED SLAB: R-10 FOR 24" BELOW SLAB

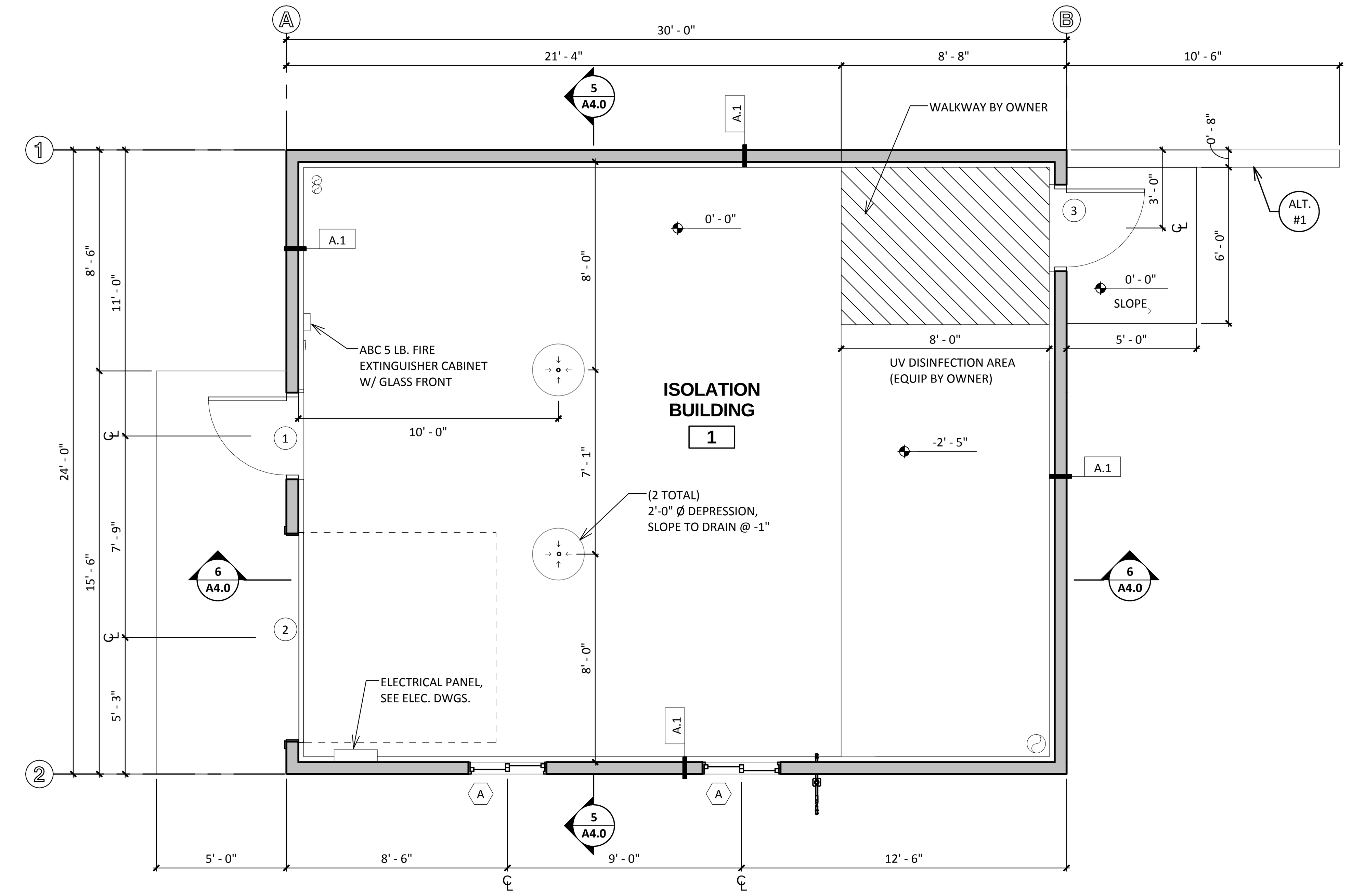
WINDOW U-VALUE:
OPERABLE: 0.43
SHGC: 0.40
SWINGING (DOOR): U-0.37
ROLL UP (DOOR): R-4.75

PLASTIC (CHAPTER 26):
FOAM PLASTIC INSULATION (SPRAY FOAM)
FLAME SPREAD: <75
SMOKE-DEVELOPED INDEX: </= 450

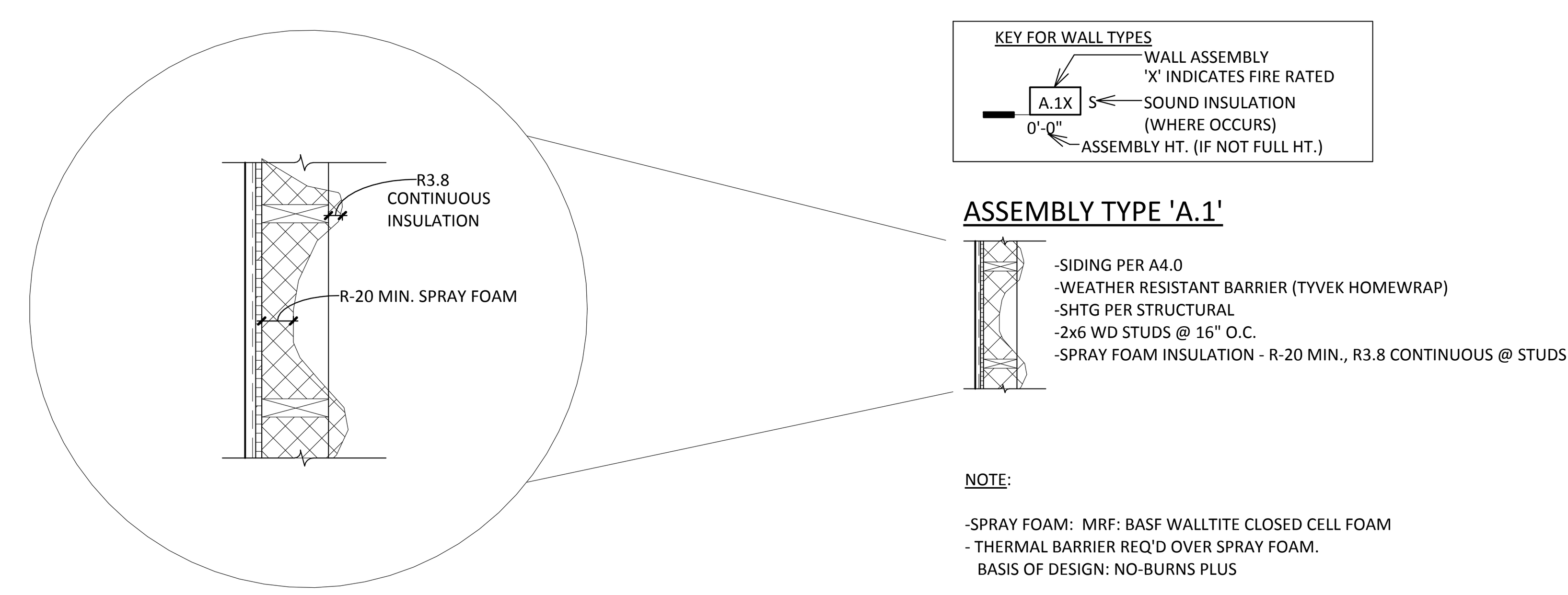
2603.4 THERMAL BARRIER: FOAM PLASTIC SHALL BE SEPARATED FROM THE INTERIOR OF A BUILDING BY AN APPROVED THERMAL BARRIER OF 1/2" GYPSUM WALL BOARD OR APPROVED MATERIAL MEETING TEMPERATURE TRANSMISSION AND FIRE TEST AND INTEGRITY FIRE TEST OF NFPA 275.



1 CODE REVIEW PLAN
3/16" = 1'-0"



2 FLOOR PLAN
1/4" = 1'-0"



KEY FOR WALL TYPES
WALL ASSEMBLY 'X' INDICATES FIRE RATED
SOUND INSULATION (WHERE OCCURS)
ASSEMBLY HT. (IF NOT FULL HT.)

ASSEMBLY TYPE 'A.1'
-SIDING PER A4.0
-WEATHER RESISTANT BARRIER (TYVEK HOMEWRAP)
-SHTG PER STRUCTURAL
-2x6 WD STUDS @ 16" O.C.
-SPRAY FOAM INSULATION - R-20 MIN., R3.8 CONTINUOUS @ STUDS

NOTE:

-SPRAY FOAM: MRF: BASF WALLTITE CLOSED CELL FOAM
- THERMAL BARRIER REQ'D OVER SPRAY FOAM.
BASIS OF DESIGN: NO-BURNS PLUS

3 WALL TYPES
1/2" = 1'-0"

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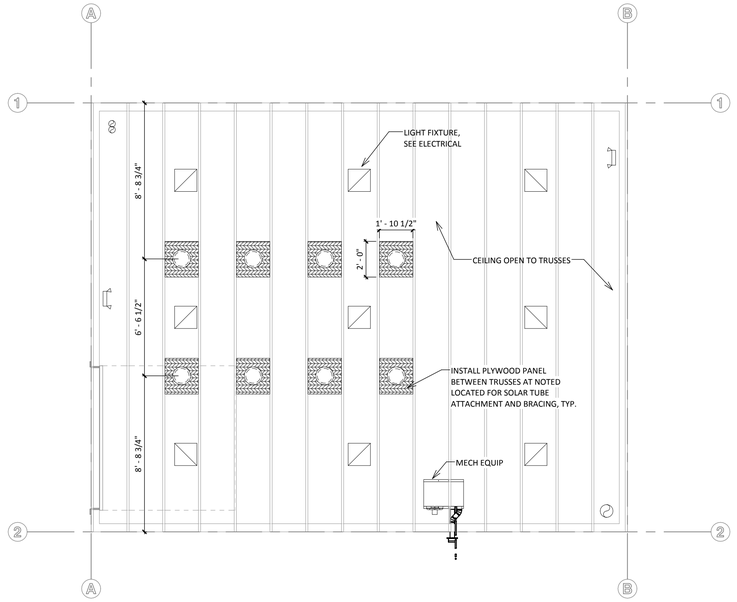
MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
FLOOR PLAN AND CODE REVIEW

DRAWN: MKS
CHECKED: NNH
DATE: 04/13/16
JOB#: 150208

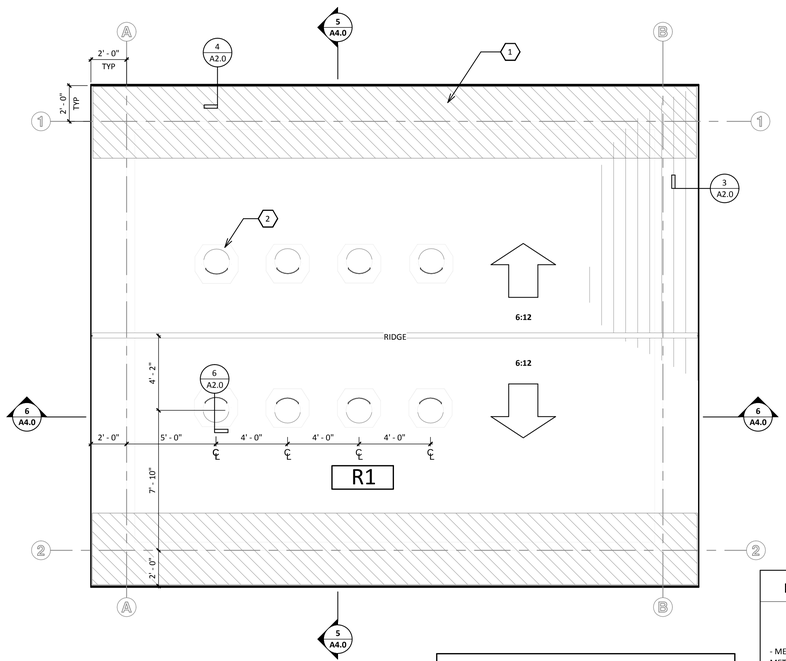
REVISIONS:

A1.0



1 REFLECTED CEILING PLAN

1/4" = 1'-0"



2 ROOF PLAN

1/4" = 1'-0"

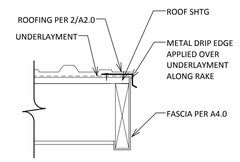
ROOF PLAN KEYNOTES

1	W.R. MEADOWS, INC ICE AND WATER SHIELD 'SEALMASTIC EMULSION TYPE 1' INSTALLATION @ EAVES PER MANUFACTURERS RECOMMENDATION
2	VELUX 10" SUN TUNNEL TUBULAR SKYLIGHT - MODEL # TSR 010 0000

ROOF TYPE LEGEND

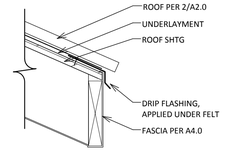
R1

- METAL ROOFING PANELS W/ EXPOSED METAL FASTENERS, SEE EXTERIOR ELEVATIONS
- UNDERLAYMENT (THANIUM UDL 30)
- SHTG PER STRUCT
- PRE-MFR TRUSSES
- R-49 SPRAY FOAM INSULATION



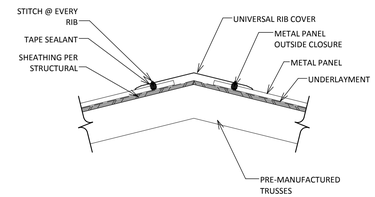
3 DRIP EDGE - RAKE

1 1/2" = 1'-0"



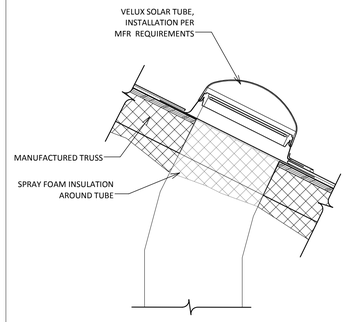
4 DRIP EDGE

1 1/2" = 1'-0"



5 RIDGE CAP @ MTL ROOF

1" = 1'-0"



6 ROOF @ SOLAR TUBE

1" = 1'-0"

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STATE OF MONTANA

MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

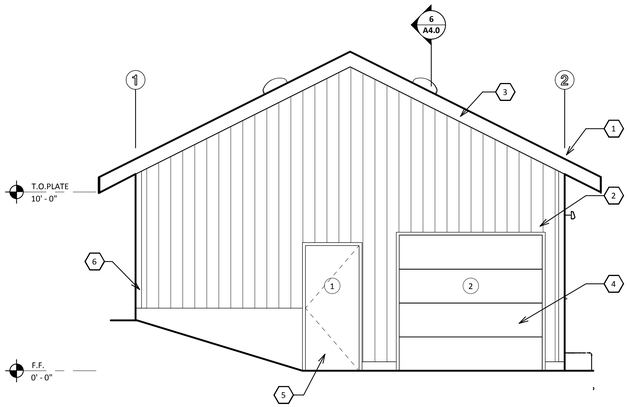
SHEET

RCP AND ROOF PLAN

DRAWN: MKS
CHECKED: NMH
DATE: 04/13/16
JOB#: 160206

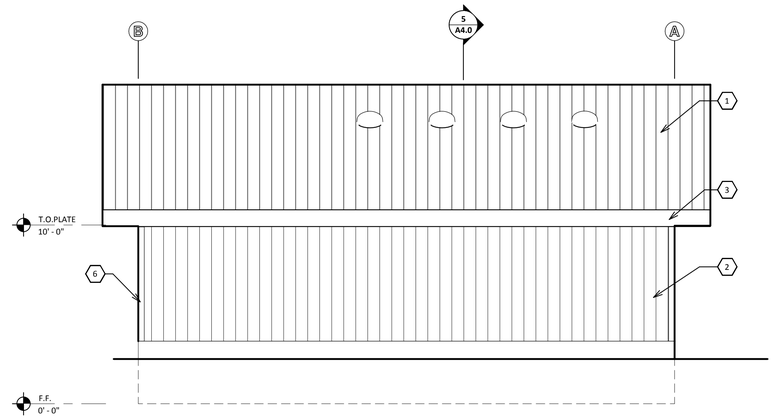
REVISIONS:

A2.0



1 NORTH ELEVATION

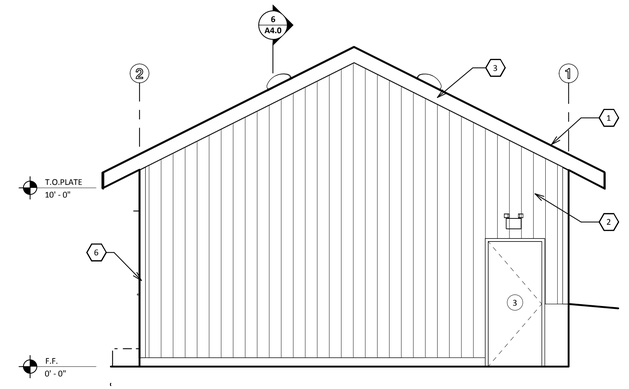
1/4" = 1'-0"



2 EAST ELEVATION

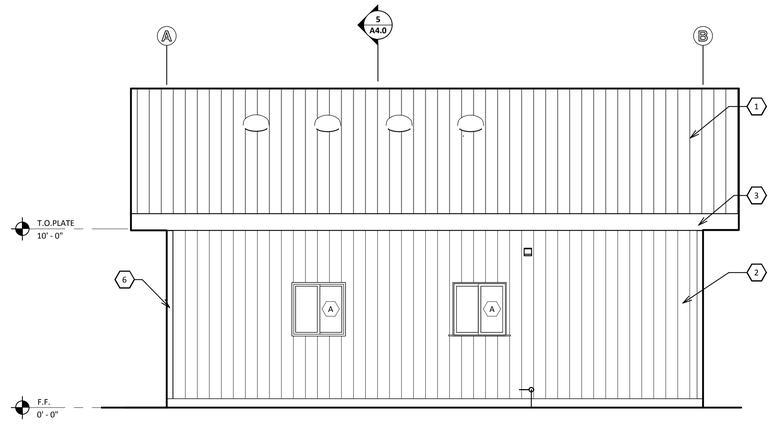
1/4" = 1'-0"

EXTERIOR ELEVATION KEYNOTES	
1	AMERICAN BUILDINGS LONGSPAN METAL ROOFING (L3P) 24 GAUGE - 'POLAR WHITE'
2	AMERICAN BUILDINGS LONGSPAN METAL SIDING (L3P) 26 GAUGE - 'HUNTER GREEN'
3	AMERICAN BUILDINGS FLAT METAL FASCIA PANEL OVER SUB-FASCIA - ' POLAR WHITE'
4	8'-0" X 7'-0" CLOPAY MANUAL OVERHEAD DOOR MODEL 3150 (STANDARD DUTY-POLYSTYRENE INSULATED) - 'WHITE'
5	CURRIES (ASSA ABLOY) HOLLOW METAL DOOR - PAINT SHERWIN WILLIAMS - 'PURE WHITE' SW7005
6	AMERICAN BUILDINGS 4" METAL CORNER TRIM - ' POLAR WHITE'



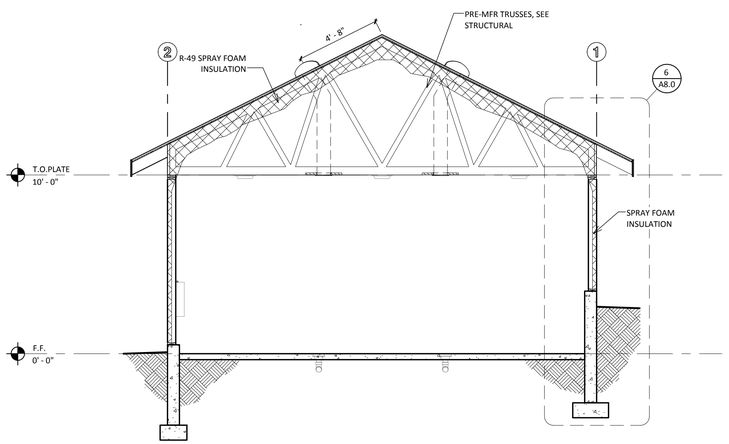
3 SOUTH ELEVATION

1/4" = 1'-0"



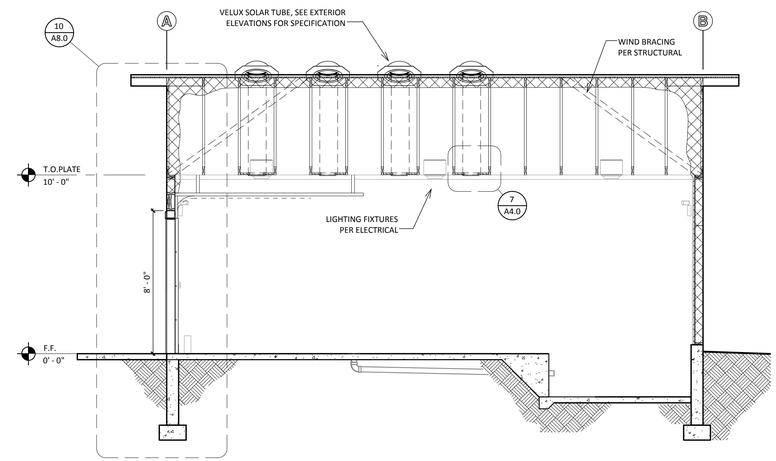
4 WEST ELEVATION

1/4" = 1'-0"



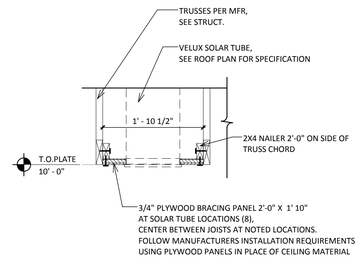
5 EAST-WEST BLDG SECTION

1/4" = 1'-0"



6 NORTH-SOUTH BLDG SECTION

1/4" = 1'-0"



7 SOLAR TUBE BRACING DET.

3/4" = 1'-0"

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NEW FISH ISOLATION BUILDING

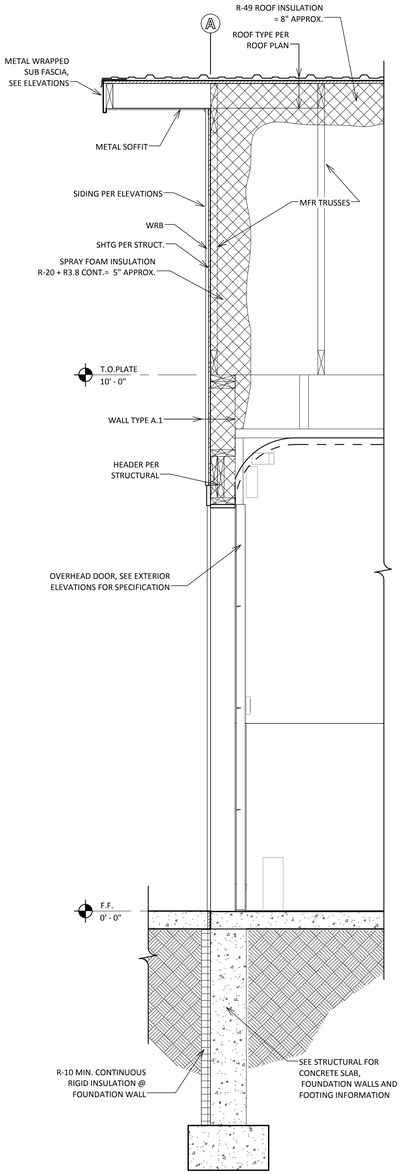
SEKOKINI SPRINGS FISH HATCHERY
5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
EXTERIOR ELEVATIONS AND BUILDING SECTIONS

DRAWN: MKS
CHECKED: NMH
DATE: 04/13/16
JOB#: 160208

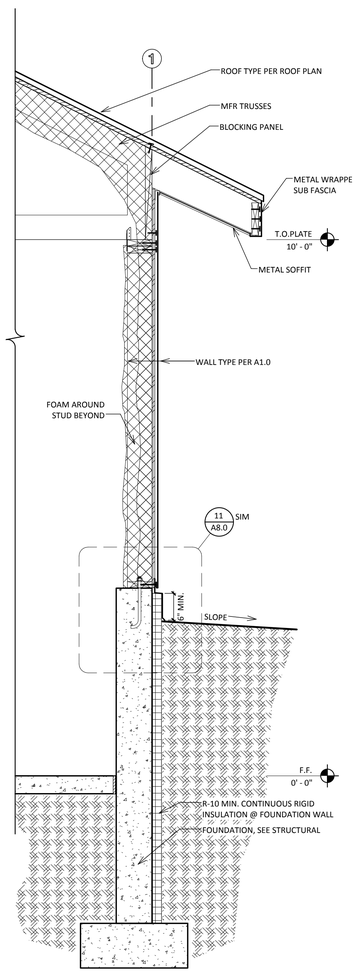
REVISIONS:

A4.0



10 WALL SECTION @ OUTLOOKER

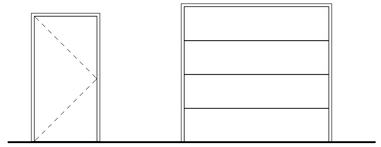
3/4" = 1'-0"



6 TYPICAL WALL SECTION

3/4" = 1'-0"

DOOR SCHEDULE									
DOOR NO.	FROM		TO		SIZE	DOOR MAT.	FRAME MAT.	HARDWARE GROUP	REMARKS
1	OUTSIDE	3	ISOLATION BUILDING	1	3-0" x 7'-0" x 1 3/4"	HM	HM	1	
2	OUTSIDE	3	ISOLATION BUILDING	1	8'-0" x 7'-7"				MANUAL OPERATION
3	OUTSIDE	3	ISOLATION BUILDING	1	3-0" x 7'-0" x 1 3/4"	HM	HM	1	



DOOR TYPE A
EXTERIOR INSULATED
HOLLOW METAL DOOR

DOOR TYPE B
METAL OVERHEAD
SECTIONAL DOOR

HARDWARE KEY

HDW-1

1 1/2 PR BUTTS
1 LOCKSET F-82
BHMA B
1 CLOSER
1 PULL
WEATHERSTRIPPING
1 THRESHOLD

GENERAL NOTES:

1. HARDWARE:
MFR: HAGER OR APPROVED EQUAL - GRADE 2
FINISH: SATIN CHROME PLATED OVER NICKEL ON BRASS OR BRONZE

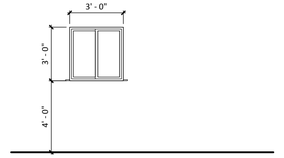
2. CONTRACTOR RESPONSIBLE TO NOTIFY DESIGNER OF SUBSTITUTIONS FOR NOTED HARDWARE.

3. DOOR & DOOR HARDWARE SUBMITTAL REQUIRED.

4. REQUIRED MINIMUM DOOR VALUES:
SWINGING DOOR: U-0.37
ROLL-UP DOOR: R-4.75

1 DOOR SCHEDULE

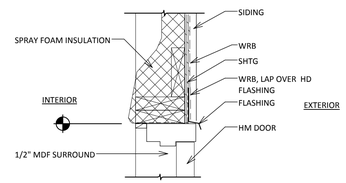
1/4" = 1'-0"



REQUIRED MINIMUM WINDOW VALUES:
OPERABLE: 0.43
SHGC: 0.40

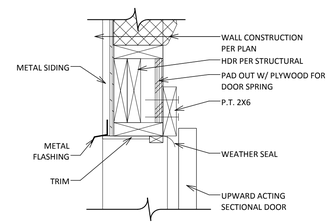
2 WINDOW LEGEND

1/4" = 1'-0"



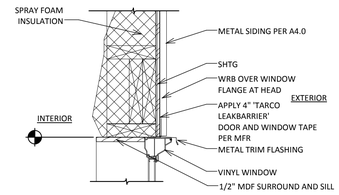
3 HM HEAD DETAIL

1 1/2" = 1'-0"



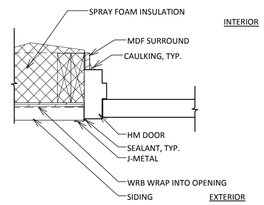
4 OH DOOR HEAD DETAIL

1 1/2" = 1'-0"



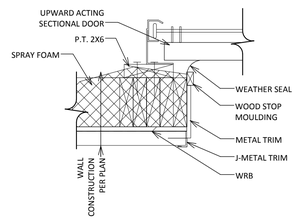
5 VINYL WIN HEAD DETAIL

1 1/2" = 1'-0"



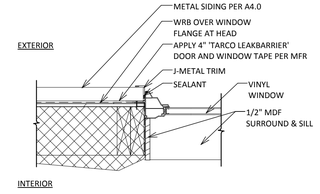
7 HM JAMB DETAIL

1 1/2" = 1'-0"



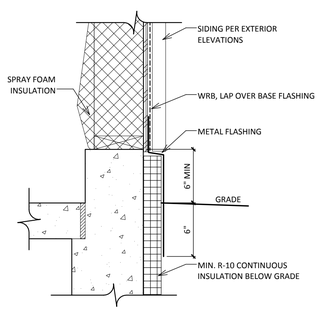
8 OH DOOR JAMB DETAIL

1 1/2" = 1'-0"



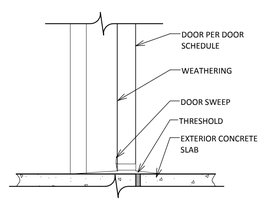
9 VINYL WIN JAMB DETAIL

1 1/2" = 1'-0"



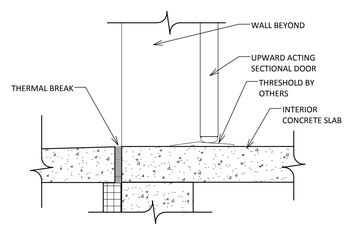
11 FLASHING AT FND INSULATION

1 1/2" = 1'-0"



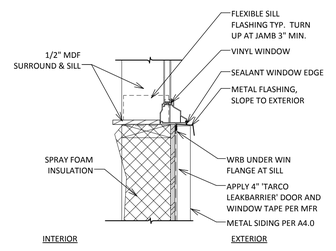
12 THRESHOLD @ HM DOOR

1 1/2" = 1'-0"



13 THRESHOLD @ OH DOOR

1 1/2" = 1'-0"



14 VINYL WIN SILL DETAIL

1 1/2" = 1'-0"

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5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
WALL SECTIONS, DETAILS AND SCHEDULES

DRAWN: MKS
CHECKED: NMH
DATE: 04/13/16
JOB#: 160208

REVISIONS:

A8.0

1. GOVERNING CODES AND GENERAL NOTES

INTERNATIONAL BUILDING CODE (IBC) 2012
AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)- MINIMUM DESIGN LOADS FOR BUILDINGS & OTHER STRUCTURES- ASCE 7-10
AMERICAN CONCRETE INSTITUTE (ACI) - BUILDING CODE & COMMENTARY ACI 318-11
AMERICAN CONCRETE INSTITUTE (ACI) - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES ACI 530-11
AMERICAN INSTITUTE STEEL OF CONSTRUCTION (AISC) - STEEL CONSTRUCTION MANUAL FOURTEENTH EDITION AISC 360-10
AMERICAN FOREST & PAPER ASSOCIATION (AF&PA) - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION NDS 2012
AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) 9TH EDITION
THE CONTRACTOR IS RESPONSIBLE FOR LOCATING OR HAVING LOCATED THE BUILDING ON THE SITE AND VERIFYING ALL FOUNDATION DIMENSIONS, AND SETBACK REQUIREMENTS FROM EASEMENTS AND PROPERTY LINES WITH THE ARCHITECT PRIOR TO CONSTRUCTION.

2. DESIGN LOADS

1. ROOF DEAD LOAD	20 PSF
1. FLOOR LIVE LOAD	100 PSF
2. ROOF LIVE LOAD -	20 PSF
3. ROOF SNOW LOAD	
A. THE GROUND SNOW LOAD, Pg -	95.0 PSF
B. FLAT-ROOF SNOW LOAD, Pf -	73.0 PSF
C. SNOW EXPOSURE FACTOR, Ce -	1.0
D. SNOW LOAD IMPORTANCE FACTOR, I -	1
E. THERMAL FACTOR, Ct -	1.1
4. WIND LOAD	
A. BASIC WIND SPEED (3-SECOND GUST) -	115 MPH
B. WIND IMPORTANCE FACTOR-	1.0
C. BUILDING CATEGORY -	II
D. WIND EXPOSURE -	C
5. EARTHQUAKE DESIGN DATA	
A. SEISMIC IMPORTANCE FACTOR -	1.0
B. OCCUPANCY CATEGORY-	II
C. MAPPED SPECTRAL RESPONSE ACCELERATIONS Ss / S1 -	0.588 / 0.168
D. SPECTRAL RESPONSE COEFFICIENTS SDS / SD1 -	0.521/ 0.239
E. SITE CLASS -	D
F. SEISMIC DESIGN CATEGORY	D
G. BASIC SEISMIC FORCE RESISTING SYSTEM-	LIGHT FRAMED WALL SYSTEM W/ WOOD STRUCTURAL PANELS
H. BASE SHEAR	4 KIPS
I. SEISMIC RESPONSE COEFFICIENT Cs	0.08
J. RESPONSE MODIFICATION FACTOR	6.5
K. ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL FORCE

NOTE: UNBALANCED SNOW LOADS ON S2.0

1 STRUCTURAL DESIGN INFORMATION

1" = 1'-0"

1. ALL CEMENT IN CONCRETE TO CONFORM TO ASTM C150 SPECIFICATION FOR PORTLAND CEMENT.
2. ALL AGGREGATE TO CONFORM TO ASTM C33 SPECIFICATION FOR CONCRETE AGGREGATES
3. THE MAXIMUM NOMINAL AGGREGATE SIZE SHALL BE ONE FIFTH THE NARROWEST DIMENSION BETWEEN THE FORMS OR ONE THIRD THE DEPTH OF THE SLAB, OR THREE-FOURTHS THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES, WHICHEVER APPLIES. THESE PROVISIONS ARE TO ASSURE CONCRETE PLACEMENT WITHOUT VOIDS OR HONEYCOMBS AND MAY BE WAIVED ONLY BY THE BUILDING OFFICIAL IF THEY JUDGE THAT LARGER SIZES ARE ADEQUATE BECAUSE OF WORKABILITY AND METHODS OF CONSOLIDATION.
4. ALL REINFORCING BARS SPECIFIED SHALL BE DEFORMED BARS AT LEAST GRADE 60.
5. ALL FOUNDATION CONCRETE TO BE 3000 PSI MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS, CONCRETE RETAINING WALLS & SLAB TO BE 4000 PSI MIN. COMPRESSIVE STRENGTH. CONCRETE SUPPLIER TO MIX BASED ON HIS TESTING TO ASSURE THIS MINIMUM COMPRESSIVE STRENGTH PER ACI 318 SECTION 5.3. IN THE ABSENCE OF SUFFICIENT TEST DATA, CONCRETE PROPORTIONING SHALL BE DONE IN ACCORDANCE WITH ACI 318 SECTION 5.3.1.2, 5.3.2.2, 5.3.3.2, & 5.4.
6. CONCRETE CURING (OTHER THAN HIGH-EARLY) SHALL BE MAINTAINED ABOVE A TEMPERATURE OF 50°F AND IN A MOIST CONDITION FOR AT LEAST THE FIRST SEVEN DAYS AFTER PLACEMENT. HIGH EARLY CONCRETE SHALL BE CURED ABOVE 50°F AND IN A MOIST CONDITION FOR AT LEAST THE FIRST THREE DAYS.
7. ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING FREEZING OR NEAR-FREEZING WEATHER. ALL CONCRETE MATERIALS, REINFORCEMENT, FORMS, FILLERS, AND GROUND WHICH THE CONCRETE IS TO BE IN CONTACT WITH IS TO BE FREE OF FROST. FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.
8. DURING HOT WEATHER, PROPER ATTENTION SHALL BE GIVEN TO INGREDIENTS, PRODUCTION METHODS, HANDLING, PLACING, PROTECTION, AND CURING TO PREVENT EXCESSIVE CONCRETE TEMPERATURES AND EVAPORATION THAT MAY IMPAIR REQUIRED STRENGTH OR SERVICEABILITY OF THE MATERIAL.
9. CONDUITS, PIPES, AND SLEEVES SHALL BE ALLOWED ONLY WHERE NOTED ON THE PLANS. ANY ADDITIONAL ALTERATIONS ARE NOT PERMITTED WITHOUT ENGINEER APPROVAL THAT IT WILL NOT COMPROMISE STRUCTURAL INTEGRITY.
10. THE SURFACE OF ALL CONSTRUCTION JOINTS SHALL BE CLEANED AND LAITANCE REMOVED. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, JOINTS SHALL BE WETTED AND STANDING WATER REMOVED. PROVISIONS SHALL BE MADE TO TRANSFER SHEAR FORCES THROUGH THE CONSTRUCTION JOINT.
11. ALL BENDING OF REINFORCING MATERIAL SHALL BE DONE COLD AND MINIMUM BEND DIAMETER SHALL BE 6 TIMES THE NOMINAL BAR DIAMETER FOR #3-#8 BAR AND 8 TIMES THE NOMINAL BAR DIAMETER FOR #9-#11 BARS. REINFORCEMENT PARTIALLY IMBEDDED IN CONCRETE MAY BE FIELD BENT.
12. REINFORCEMENT, ANCHORS AND EMBEDDED ITEMS SHALL BE ACCURATELY PLACED AND SUPPORTED BEFORE CONCRETE IS PLACED AND SHALL BE SECURED AGAINST DISPLACEMENT WITHIN TOLERANCES OF SECTION 1907.5 OF THE CURRENT VERSION OF CURRENT IBC.
13. SEE 7/S0.0 FOR SITE PREP AND STRUCTURAL FILL REQUIREMENTS ON THIS SHEET FOR SUBGRADE PREP.
14. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING OR HAVING LOCATED THE BUILDING ON THE SITE AND VERIFYING ALL FOUNDATION DIMENSIONS, AND SETBACK REQUIREMENTS FROM EASEMENTS AND PROPERTY LINES WITH THE ARCHITECT PRIOR TO CONSTRUCTION.
15. ALL WALLS & FOUNDATIONS SHALL BE MECHANICALLY CONSOLIDATED. VIBRATORS SHALL BE INSERTED IN PREVIOUS POURED FRESH CONCRETE TO PREVENT COLD JOINTS WHEN MULTIPLE LAYER OF CONCRETE ARE PLACED IN A WALL.
16. INTERIOR SLAB ON GRADE SHALL BE CLASS 1 W/ A LIGHT BROOM FINISH. TOTAL AIR CONTENT SHALL NOT EXCEED 3%. FLOOR SHALL BE WITHIN 1/8" PER 10 FT FOR FLATNESS REQUIREMENTS. SLAB SHALL BE SEALED WITH A HIGH SOLID CONTENT SOLVENT BASED CURE & SEAL, EUCLID SUPER DIAMOND OR APPROVED EQUAL
17. CONCRETE IN SIDEWALKS OR EXTERIOR SLABS THAT WILL BE EXPOSED TO FREEZING/THAWING OR DEICING CHEMICALS SHALL HAVE A MINIMUM 0.45 WATER/CEMENTITIOUS RATIO BY WEIGHT FOR NORMAL WEIGHT AGGREGATE CONCRETE AND BE 4000 PSI MINIMUM.
18. REFER TO TABLE BELOW FOR MINIMUM COVER AND TOTAL AIR CONTENT FOR CONCRETE IN DIFFERENT SERVICE CONDITIONS.
19. #5 BAR REQUIRED 2" CLEAR FROM TOP AND BOTTOM OF STEM WALLS AROUND FULL PERIMETER OF FOUNDATION, MIN.
20. STANDARD HOOK ON REINFORCING BAR SHALL BE:
- 180° BEND PLUS 4d EXTENSION, BUT NOT LESS THAN 2 1/2" AT FREE END OF BAR.
- 90° BEND PLUS 12d EXTENSION AT FREE END OF BAR.
- FOR STIRRUP AND TIE HOOKS: SEE S3.0
21. MINIMUM REBAR LAPS - FOR #3-15", #4-20", #5-24 & #6-30" WITH A CLEAR SPACING OF NOT LESS THAN 2d AND CLEAR COVER OF NOT LESS THAN d. ALL OTHER SPLICES CONDITIONS SHALL BE BY THE EOR AND ILLUSTRATED ON FOUNDATION PLAN & DETAIL SHEETS.
22. HORIZONTAL SUB-SLAB INSULATION TO BE DOW CHEMICAL BUILDING PRODUCTS - STYROFOAM HIGHLOAD 60 EXTRUDED POLYSTYRENE INSULATION OR APPROVED EQUAL FOR SLABS SUBJECT TO VEHICLE TRAFFIC. STYROFOAM EXTRUDED POLYSTYRENE FOAM SQUARE EDGE INSULATION W/ 25 PSI COMPRESSIVE STRENGTH MIN. UNDER SIDEWALKS. THIS INCLUDES THE INTERIOR HORIZONTAL INSULATION AT THE HEATED SLAB AND THE INSULATION AT THE EXITS WHICH DO NOT HAVE SUFFICIENT COVER FOR FROST PROTECTION.

CONCRETE PROTECTION FOR REINFORCEMENT
CAST-IN-PLACE CONCRETE (NON-PRESTRESSED)

DESCRIPTION	MINIMUM COVER (IN)
CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH	3
CONCRETE EXPOSED TO EARTH OR WEATHER:	
No. 6 THRU No. 18 BAR	2
No. 5 BAR, W31 OR D31 WIRE AND SMALLER	1-1/2
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND:	
SLABS, WALLS, AND JOISTS:	
No. 14 AND No. 18 BAR	1-1/2
No. 11 BAR AND SMALLER	3/4
BEAMS AND COLUMNS:	
PRIMARY REINFORCEMENT, TIES, STIRRUPS, AND SPIRALS	1-1/2
SHELLS, FOLDED PLATE MEMBERS:	
No. 6 BAR AND LARGER	3/4
No. 5 BAR, W31 OR D31 WIRE AND SMALLER	1/2
CONCRETE TILT-UP PANELS CAST AGAINST A RIGID HORIZONTAL SURFACE	
SUCH AS A CONCRETE SLAB EXPOSED TO THE WEATHER:	
No. 8 BAR AND SMALLER	1
No. 9 THRU No. 18 BAR	2

TOTAL AIR CONTENT FOR FROST RESISTANT
CAST-IN-PLACE CONCRETE

NOMINAL MAXIMUM AGGREGATE SIZE	AIR CONTENT (%)
3/8	7-1/2
1/2	7
3/4	6
1	6
1-1/2	5-1/2

RECOMMENDED SLUMPS FOR CONSTRUCTION
CAST-IN-PLACE CONCRETE

TYPE OF CONSTRUCTION	SLUMP MAX*/MIN
REINFORCED FOUNDATION WALLS AND FOOTINGS	3/1
PLAIN FOOTINGS, CAISSONS, AND SUBSTRUCTURE WALLS	3/1
BEAMS AND REINFORCED WALLS	4/1
BUILDING COLUMNS	4/1
PAVEMENTS AND SLABS	3/1
MASS CONCRETE	2/1

* MAY BE INCREASED 1" FOR METHODS OF CONSOLIDATION OTHER THAN VIBRATION.

2 CONCRETE NOTES

1" = 1'-0"

WOOD IBC CHAPTER 23

1. GRADE STAMPED DOUGLAS FIR/LARCH (SEE LUMBER GRADES).
2. NAILS: COMMON WIRE UNLESS OTHERWISE NOTED. EDGE OR END DISTANCES IN THE DIRECTION OF STRESS SHALL NOT BE LESS THAN ONE HALF OF THE REQUIRED PENETRATION. THE SPACING CENTER TO CENTER OF NAILS IN THE DIRECTION OF STRESS SHALL NOT BE LESS THAN THE REQUIRED PENETRATION. HOLES FOR NAILS, WHERE NECESSARY TO PREVENT SPLITTING, SHALL BE BORED TO A DIAMETER SMALLER THAN THAT OF THE NAIL.
3. ANCHOR BOLTS (FOUNDATION ANCHOR BOLTS) MINIMUM REQUIRED: PROVIDE 5/8 INCH DIAMETER ANCHOR OR MACHINE BOLTS WITH A MINIMUM OF 7 NCHES EMBEDMENT INTO THE CONCRETE AND WITHIN 12 INCHES OF EACH END OF EACH PLATE. SPACE ANCHORS AT 48 INCHES ON CENTER UNO. ANCHORS SHALL BE LOCATED A MAXIMUM OF 2 INCHES FROM THE FACE OF STUD RECEIVING WOOD STRUCTURAL PANELS. ANCHOR BOLT HOLES 1/32 TO 1/16 INCH LARGER THAN THE ANCHOR BOLT DIAMETER. HOLES MORE THAN 1/16 INCH LARGER THAN THE ANCHOR BOLT SHALL BE EPOXY FILLED UNDER THE CONTINUOUS SUPERVISION OF A LICENSED SPECIAL INSPECTOR.
4. BOLTS: NOT LESS THAN 7 BOLT DIAMETERS FROM THE END AND 4 DIAMETERS FROM THE EDGE OF THE MEMBER. BOLT HOLES 1/32 TO 1/16 INCH LARGER THAN THE BOLT DIAMETER. ALL NUTS SHALL BE TIGHTENED WHEN INSTALLED AND RE-TIGHTENED AT THE COMPLETION OF WORK OR BEFORE CLOSING IN. THREAD PROJECTION SHALL BE 1/16 INCH MINIMUM BEYOND THE NUT. BOLTS IN SPECIFIED SLOTTED HOLES SHALL BE CENTERED IN THE SLOT UNO.
5. LAG SCREW CLEARANCE & LEAD HOLES SHALL BE BORED AS FOLLOWS: THE CLEARANCE HOLE FOR THE SHANK SHALL HAVE THE SAME DIAMETER AS THE SHANK, AND THE SAME DEPTH OF PENETRATION AS THE LENGTH OF UNTHREADED SHANK. THE LEAD HOLE FOR THE THREADED PORTION SHALL HAVE A DIAMETER EQUAL TO 60 % TO 75 % OF THE SHANK DIAMETER AND A LENGTH EQUAL TO AT LEAST THE LENGTH OF THE THREADED PORTION.
6. SQUARE STEEL PLATE WASHERS (PW): ANCHOR BOLTS, BOLTS, LAGS AND NUTS, NOTED PW, SHALL BE SQUARE STEEL PLATE WASHERS:

BOLT DIAM (IN)	THICKNESS (IN)	SIZE (IN)
1/2	3/16	2 X 2
5/8	1/4	2 1/2X2 1/2
3/4	5/16	2 3/4X2 3/4
7/8	5/16	3X3
1	3/8	3 1/2X3 1/2

7. CUT STEEL WASHERS: FOR BOLTS, LAGS AND NUTS, UNO.
8. FRAMING CONNECTORS: PER MANUFACTURER'S APPROVED PRODUCT EVALUATION REPORTS ICBO APPROVED AND INSTALLED ACCORDINGLY. SIZE AND NUMBER OF NAILS TO BE MAXIMUM SPECIFIED BY THE MANUFACTURER UNO.
9. NAILED/SCREWED HOLD DOWN ANCHORS: INSTALL PER MANUFACTURER'S APPROVED ICBO PRODUCT EVALUATION REPORT. INSTALL HOLD DOWNS 1/2 INCH MINIMUM ABOVE THE PLATE TO ALLOW FOR TIGHTENING ANCHOR BOLT. THE HOLD DOWN SHALL BE INSTALLED TIGHT TO THE HOLD DOWN POST WITHOUT FILLERS OR DAPPING. DO NOT BEND HOLD DOWN ANCHORS.
10. BOLTED HOLD DOWN ANCHORS: INSTALL PER MANUFACTURER'S APPROVED ICBO PRODUCT EVALUATION REPORT. INSTALL HOLD DOWNS 1/2 INCH MINIMUM ABOVE THE PLATE TO ALLOW FOR TIGHTENING ANCHOR BOLT. TIGHTEN HOLD DOWN ANCHOR BEFORE TIGHTENING POST BOLTS. USE EXTRA CARE IN BORING THE POST BOLT HOLES 1/32 TO 1/16 LARGER THAN THE BOLT DIAMETER. THE HOLD DOWN SHALL BE INSTALLED TIGHT TO THE HOLD DOWN POST WITHOUT FILLERS OR DAPPING. THE POST BOLTS SHALL NOT BE COUNTERSUNK INTO THE HOLD DOWN POST UNO. DO NOT BEND HOLD DOWN ANCHORS.
11. PRESERVATIVE TREATED WOOD: WOOD EXPOSED TO THE WEATHER; FOUNDATION PLATES ON CONCRETE SLABS, FOUNDATIONS WHICH ARE IN DIRECT CONTACT WITH EARTH SHALL BE TREATED WOOD WITH PRESERVATIVE RETENTION AS REQUIRED FOR USE. NEWLY EXPOSED SURFACES RESULTING FROM FIELD CUTTING, BORING OR HANDLING SHALL BE FIELD TREATED IN ACCORDANCE WITH AWPA M-4.
12. TOP PLATES: TWO PIECES, SAME SIZE AS STUDS, STAGGER SPLICES AND CONNECT PER SCHEDULE.
13. FULL-DEPTH SOLID BLOCKING OR CROSS BRACING: INSTALLED AT INTERVALS NOT EXCEEDING 8 FEET FOR ALL JOISTS AND RAFTERS 2x12 AND DEEPER. SOLID BLOCKING OR I-JOIST BLOCKING SHALL BE INSTALLED AT WALL JOIST BEARING WHERE RIM JOISTS ARE NOT INSTALLED
14. SOLID BLOCKING: TWO INCH FULL WIDTH BLOCKING FIRE STOPS IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT THE CEILING AND FLOOR LEVELS AND AT 10-FOOT INTERVALS HORIZONTAL.
15. CUTTING AND NOTCHING: DO NOT CUT, BORE, COUNTERSINK OR NOTCH WOOD MEMBERS EXCEPT WHERE SHOWN IN THE DETAILS. HOLES THROUGH PLATES, STUDS AND DOUBLE PLATES IN WALLS SHALL NOT EXCEED 40 % THE MEMBER WIDTH AND SHALL BE LOCATED IN THE CENTER OF THE MEMBER. SEE DETAILS ON FRAMING DRAWINGS.
16. PARTITIONS: DOUBLE JOISTS UNDER PARTITIONS PARALLEL TO JOISTS AND PROVIDE SOLID BLOCKING UNDER PARTITIONS PERPENDICULAR TO JOISTS.
17. END SUPPORT: ROOF AND FLOOR JOISTS OVER 4 INCHES DEEP SHALL HAVE THEIR ENDS HELD IN POSITION WITH EITHER: FULL DEPTH SOLID BLOCKING; NAILED BRIDGING: NAILING OR BOLTING TO OTHER FRAMING MEMBERS; OR APPROVED JOIST HANGERS.
18. GALVANIZING: ALL EXPOSED STEEL TIMBER HARDWARE, FASTENERS AND CONNECTORS.
19.TRIMMERS AND HEADER JOISTS SHALL BE DOUBLED OR OF LUMBER OF EQUIVALENT CROSS SECTION WHERE THE SPAN OF THE HEADER EXCEEDS 4 FT.
20.NOT LESS THAN 3 STUDS OR LUMBER OF EQUIVALENT CROSS SECTION SHALL BE INSTALLED AT EACH CORNER OF ALL EXT. WALLS.

LUMBER GRADES DOUGLAS FIR/LARCH IBC CHAPTER 23

COMPLY WITH PS 20, AMERICAN SOFTWOOD LUMBER STANDARD AND STANDARD GRADING RULES FOR WESTERN LUMBER. 19% MAXIMUM
MOISTURE CONTENT AT TIME OF PLACEMENT.
1. DIMENSION LUMBER: BLOCKING 2" TO 4" THICK, STANDARD
2. DIMENSION LUMBER: JOISTS & RAFTERS, 2" TO 4" THICK, NO. 2 AND BETTER.
3. BEAMS AND STRINGERS: 5" AND THICKER, NO. 1
4. POSTS AND TIMBERS: 5" BY 5" AND LARGER, NO.1
5. HOLD DOWN POSTS: NO. 1

WOOD STRUCTURAL PANELS PANEL - EXPOSURE I APA RATED
1. REFERENCES: PS1, PS2, APA STANDARD PRP-108, NATIONAL EVALUATION SERVICE REPORT NER-108 AND ICBO ES REPORT 1952.
2. WALL PANELS: PER SCHEDULE
3. ROOF PANELS: PER SCHEDULE
4. FLOOR PANELS: WEYERHAEUSER EDGE GOLD T&G EXPOSURE 1 PANEL OR APPROVED EQUAL. FOR INTERIOR FRAMING NOT EXPOSED TO WEATHER DURING CONSTRUCTION USE WEYERHAEUSER EDGE T&G EXPOSURE 1 PANEL OR APPROVED EQUAL.
5. BLOCKING:
A) WALLS: ALL UNSUPPORTED PANEL JOINTS SHALL BE BLOCKED SOLID WITH 2x BLOCKING.
B) FLOORS & ROOFS: WHERE NOTED ON THE DRAWINGS, ALL UNSUPPORTED PANEL JOINTS SHALL BE BLOCKED SOLID WITH 2x4 FLAT BLOCKING
6. NAILING: COMMON WIRE NAILS IN PANEL NAILS SHALL BE DRIVEN SO THAT THE HEADS ARE FLUSH WITH THE SURFACE OF THE PANEL. FIELD NAILING (FN) SHALL BE PER SCHEDULE AND THE MINIMUM PANEL EDGE DISTANCES SHALL BE MAINTAINED.
7. MACHINE NAILING: SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR THIS PROJECT AND REVIEW BY THE ENGINEER. THE USE OF MACHINE NAILING IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. PANEL NAILS SHALL BE DRIVEN SO THAT THE HEADS ARE FLUSH WITH THE SURFACE OF THE PANEL AND THE MINIMUM PANEL EDGE DISTANCES ARE MAINTAINED.
8. GLUED FLOORS: FIELD GLUE TO ALL SUPPORTS AND T&G EDGES PER APA, AFG-01. FRAMING SHALL BE FREE OF SURFACE MOISTURE & DEBRIS PRIOR TO GLUING. GLUED FLOOR SHALL BE SCREWED OR RING SHANK NAILS SHALL BE USED.
9. WOOD STRUCTURAL PANELS (PANELS): WHERE ADJACENT WALLS ARE PANELED, PANELS SHALL BE INSTALLED OVER AND UNDER OPENINGS

COMMON WIRE NAILS

SIZE PENNY	DIAMETER INCHES	WIRE GAGE	PENETRATION INCHES
8d	.131	10-1/4	1-1/2
10d	.148	9	1-5/8
16d	.162	8	1-3/4
20d	.192	6	2-1/8
30d	.207	5	2-1/4

PENETRATION IS MEASURED INTO THE PIECE RECEIVING THE NAIL POINT. 1-1/2 INCHES OF PENETRATION FOR 10d AND 16d NAILS IS ACCEPTABLE FOR TOP PLATES AND DOUBLED 2X MEMBERS. WHERE THE NAIL PENETRATION WILL BE LESS THAN SPECIFIED, INCREASE NAIL LENGTH (SIZE) TO OBTAIN THE PENETRATION REQUIRED FOR THE NAIL SPECIFIED.

ALL HORIZONTAL SEAMS ON PANELED SHEAR WALLS TO BE BLOCKED AND VERTICAL SEAMS TO LIE ON A STUD LINE, SEE ALL DIAPHRAGM BOUNDARIES TO BE 3x OR DBL 2x AND STAGGER NAILED PER SCHEDULE. SHEAR WALL DIAPHRAGM BOUNDARIES ARE STRUCTURAL RESISTANCE LINES, I.E. SILL PLATES, TOP PLATES, TRIMMERS TO STRUCTURAL MEMBERS. PANEL EDGES ARE VERTICAL OR HORIZONTAL SEAMS, NOT ONE OF ABOVE. FIELD IS FASTENING AREAS WHERE MEMBERING OCCURS INSIDE PANEL EDGES. SHEAR WALL NAILS SHALL BE PLACED NOT LESS THAN 3/8" FROM THE PANEL EDGE, AND FIRMLY DRIVEN INTO FRAMING MEMBER WITHOUT CRUSHING THE SURFACE OF THE SHEETING WITH THE HEAD. SHEAR WALL SHEATHING MATERIAL TO BE MANUFACTURED USING EXTERIOR GLUE; IF PARTICLEBOARD, MINIMUM GRADE IS 2-M-F, IF FRAMED OPENINGS IN SHEAR WALLS SHALL CONSIST OF DOUBLE FRAMING MEMBERS WITH NO PANEL EDGES ALIGNING WITH THE FRAME LINE WITHIN 2'. THE EDGE NAILING SHALL BE 4" STAGGERED UNLESS A PATTERN IS SPECIFIED ON THE SHEAR WALL SCHEDULE. ALL LUMBER TO BE NUMBER 2 OR BETTER UNLESS SPECIFIED OTHERWISE. ALL BEAMS/HEADERS TO BE AS SPECIFIED, CONTACT ENGINEER FOR SUBSTITUTIONS SINCE ALLOWABLE STRESSES VARY

STRUCTURAL CONNECTORS

SIMPSON STRONG-TIE IS SPECIFIED FOR ALL LIGHT GAUGE METAL CONNECTORS SUCH AS HOLD DOWNS, COLUMN CAPS & BASES, JOIST, TRUSS & BEAM HANGERS & CONNECTORS AND STRAPS & TIES UNLESS NOTED OTHERWISE. USP STRUCTURAL CONNECTORS ARE AN ACCEPTABLE SUBSTITUTION PROVIDED THE LOAD VALUE FOR THE UPS PRODUCT MEETS OR EXCEEDS THE SIMPSON PRODUCT.

IF LUMBER OR PREFABRICATED PORTIONS OF THE BUILDING ARE STORED PRIOR TO INSTALLATION THESE MATERIALS SHALL BE PROTECTED FROM WEATHER AND STORED ON DUNNAGE TO PREVENT THEM FROM SITTING IN STANDING WATER OR SNOW OR IN CONTACT WITH THE GROUND.

3 WOOD FRAMING NOTES

1" = 1'-0"

CONNECTION	NAILING [1]
1. JOIST TO SILL OR GIRDER, TOENAIL	3-8d
2. BRIDGING TO JOIST, TOENAIL EACH END	2-8d
3. 1"X6" SUBFLOOR OR LESS TO EACH JOIST, FACE NAIL	2-8d
4. WIDER THAN 1"X6" SUBFLOOR TO EACH JOIST, FACE NAIL	3-8d
5. 2" SUBFLOOR TO JOIST OR GIRDER, BLIND AND FACE NAIL	2-16d
6. SOLE PLATE TO JOIST OR BLOCKING, TYPICAL FACE NAIL	16d @ 16" o.c.
SOLE PLATE TO JOIST OR BLOCKING, AT BRACED WALL PANELS	3-16d @ 16"
7. TOP PLATE TO STUD, END NAIL	2-16d
8. STUD TO SOLE PLATE [8]	4-8d,TOENAIL OR 2-16d, END NAIL
9. DOUBLE STUDS, FACE NAIL	16d @ 24" o.c.
10. DOUBLED TOP PLATES, TYPICAL FACE NAIL	16d @ 16" o.c.
DOUBLE TOP PLATES, LAP SPLICE (MIN) SEE F4/S2.0	8-16d
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE, TOE NAIL	3-8d
12. RIM JOIST TO TOP PLATE, TOENAIL	8d @ 6" o.c.
13. TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL	2-16d
14. CONTINUOUS HEADER, TWO PIECES	16d @ 16" o.c. ALONG EACH EDGE
15. CEILING JOIST TO PLATE, TOENAIL	3-8d
16. CONTINUOUS HEADER TO STUD, TOENAIL	4-8d
17. CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	3-16d
18. CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	3-16d
19. RAFTER TO PLATE, TOE NAIL	3-8d
20. 1" BRACE TO EACH STUD AND PLATE, FACE NAIL	2-8d
21. 1"X8" SHEATHING OR LESS TO EACH BEARING, FACE NAIL	2-8d
22. WIDER THAN 1"X8" SHEATHING TO EACH BEARING, FACE NAIL	3-8d
23. BUILT-UP CORNER STUDS	16d @ 24" o.c.
24. BUILT-UP GIRDER AND BEAMS	20d @ 32" o.c. AT TOP AND BOTTOM AND STAGGERED 2-20d AT ENDS AND AT EACH SPLICE
25. 2" PLANKS	2-16d AT EACH BEARING
26. WOOD STRUCTURAL AND PARTICLE BOARD	SEE STRUCTURAL PLANS
27. PANEL SIDING (TO FRAMING):	
1/2" OR LESS	6d [3]
5/8"	8d [3]
28. FIBERBOARD SHEATHING:	
1/2"	No. 11 ga. [4] 6d [2] No. 16 ga. [5]
25/32"	No. 11 ga. [4] 8d [4] No. 16 ga. [5]
29. INTERIOR PANELING	
1/4"	4d [6]
3/8"	6d [7]

1. COMMON OR BOX NAILS MAY BE USED EXCEPT WHERE OTHERWISE STATED.
2. CORROSION-RESISTANT SIDING OR CASING NAILS CONFORMING TO TABLE 2304.9.1 OF IBC.
3. CORROSION-RESISTANT ROOFING NAILS WITH 7/16" DIA. HEAD AND 1-1/2" LENGTH FOR 1/2" SHEATHING AND 1-3/4" LENGTH FOR 25/32" SHEATHING CONFORMING TO TABLE 2304.9.1 OF IBC.
4. CORROSION-RESISTANT STAPLES WITH NOMINAL 7/16" CROWN AND 1-1/8" LENGTH FOR 1/2" SHEATHING AND 1-1/2" LENGTH FOR 25/32" SHEATHING CONFORMING TO TABLE 2304.9.1 OF IBC.
5. PANEL SUPPORTS AT 16" (20" IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED). CASING OR FINISH NAILS SPACED 6" ON PANEL EDGES, 12" AT INTERMEDIATE SUPPORTS.
6. PANEL SUPPORTS AT 24". CASING OR FINISH NAILS SPACED 6" ON PANEL EDGES, 12" AT INTERMEDIATE SUPPORTS.
7. WHEN 3X SOLE PLATE IS USED, END NAILING SHALL BE 2-30d BOX OR COMMON NAILS TO STUD.

4 NAILING SCHEDULE

1" = 1'-0"

SOILS AND FOUNDATIONS

A. FOUNDATIONS HAVE BEEN DESIGNED BASED ON ALLOWABLE BEARING PRESSURE OF1,500 PSF

B. CONSTRUCTION MATERIAL - EARTHWORK:
1) STRUCTURAL FILL: STRUCTURAL FILL SHALL CONSIST OF APPROVED ON-SITE SOILS OR BE FROM AN APPROVED MATERIAL SOURCE.
2) GRANULAR STRUCTURAL FILL: GRANULAR STRUCTURAL FILL SHALL MEET THE FOLLOWING GRADATION & COMPOSITION

SIEVE SIZE	% PASSING BY WEIGHT
3 INCH	100
1 1/2"	85-100
NO. 4	30-60
NO. 200	10 MAXIMUM

BOTH STRUCTURAL FILL & GRANULAR STRUCTURAL FILL SHALL MEET THE FOLLOWING:
(A) PLACED IN NO GREATER THAN 8" THICK LIFTS COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698
(B) MOISTURE CONTENT OF THE STRUCTURAL FILL AT THE TIME OF COMPACTION SHOULD BE WITHIN 3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM 698
(C) COBBLES AND BOULDERS LARGER THAN 4" MAXIMUM SIZE SHOULD NOT BE USED IN FILL MATERIALS
(D) SAND & GRAVEL SIZE PARTICLES COMPRISING THE FILL SHOULD BE HARD DURABLE ROCK MATERIALS THAT WILL NOT DEGRADE BY MOISTENING OR UNDER MECHANICAL ACTION OF THE COMPACTION EQUIPMENT; I.E. NO SHALE OR OTHER CLAYEY ROCK TYPES
(E) THE BINDER/FINES SHOULD HAVE MAXIMUM LIQUID LIMIT AND PLASTIC INDEX VALUES OF 25 & 10% RESPECTIVELY
(F) NO FROZEN, ORGANIC OR OTHER DELETERIOUS MATERIALS SHOULD BE PRESENT IN FILL MATERIAL.
(G) GRANULAR STRUCTURAL FILL SHALL BE USED UNDER BUILDING FOUNDATION AND IF THE FILL OPERATIONS ARE PLANNED FOR RELATIVELY WET FALL, WINTER & SPRING MONTHS.
3) OPEN GRADED ANGULAR CRUSH ROCK:
(I) BETWEEN 1/4 TO 3/4" ANGULAR CRUSHED ROCK
(II) COMPACTED USING VIBRATORY COMPACTION METHODS UNTIL WELL KEYED
4) DRAINAGE AGGREGATE : 1/4 TO 1 1/2" OPEN GRADED DRAINAGE AGGREGATE
5) NON-WOVEN DRAINAGE GEOTEXTILE: MIRAFI 140N OR APPROVED EQUAL. EDGES SHALL BE OVERLAPPED AND HELD IN PLACE DURING BACK FILL OPERATION TO ENSURE THE DRAIN AGGREGATE IS COMPLETELY ENCLOSED FOLLOWING BACKFILL
6) WOVEN SEPARATION FABRIC: MIRAFI 500X OR APPROVED EQUAL.
7) VAPOR BARRIER: 10 MIL WR MEADOWS PERMIATOR, STEGO INDUSTRIES STEGO WRAP CLASS A OR APPROVED EQUAL. ALL SEAMS SHALL BE OVERLAPPED & SEALED WITH MANUFACTURER APPROVED TAPE. ALL PROTRUSIONS & PENETRATIONS SHALL BE SEALED. HOLES SHALL BE REPAIRED. SEAL THE VAPOR BARRIER TO THE VERTICAL FACE OF THE STEM WALL WITH THE MANUFACTURER RECOMMENDED ATTACHMENT DETAIL. INSTALLATION SHALL MEET ASTM E 1643-C STANDARD PRACTICE FOR INSTALLATION OF VAPOR RETARDER USED IN CONTACT WITH EARTH OR FILL UNDER CONCRETE SLAB
8) DAMPPROOFING: BASF HYDROCIDE 700B COLD APPLIED WATER BASED REINFORCED EMULSIFIED ASPHALTIC DAMPPROOFING OR APPROVED EQUAL. HYDROCIDE 700B IS AN ASPHALT-BASED CLAY EMULSION WITH FIBERS. APPLICATION SHALL BE APPLIED BY BRUSH, ROLLER, OR SPRAY WITH THE PROPER EQUIPMENT PER MANUFACTURER RECOMMENDATIONS. MATERIALS AND INSTALLATION SHALL MEET ASTM D 1227, TYPE 2, CLASS 1, AND ASTM D 1187, TYPE 1
9) FOUNDATION & SLAB INSULATION: USE DOW CHEMICAL BUILDING PRODUCT OR APPROVED EQUAL
(A) VERTICAL SLAB INSULATION
(i) EXTERIOR APPLICATION - STYROFOAM BRAND PERIMATE INSULATION 2" THICK WITH A MINIMUM COMPRESSIVE STRENGTH OF 30 PSI. TOP OF INSULATION SHALL BE PROTECTED DURING & FOLLOWING CONSTRUCTION
(ii) INTERIOR APPLICATION - STYROFOAM BRAND EXTRUDED POLYSTYRENE FOAM SQUARE EDGE INSULATION 2" THICK UNO

C. SITE PREPARATION:
1) THE REMOVAL OF TOPSOIL, OTHER ORGANIC MATERIAL & FILL, INCLUDING THE CLEARING AND GRUBBING OF SURFICIAL VEGETATION AND ROOT ZONES, SHOULD BE ACCOMPLISHED WITHIN THE CONSTRUCTION ZONE PRIOR TO ANY EARTHWORK CONSTRUCTION.
2) SURFACE DRAINAGE SHOULD BE ESTABLISHED TO DIRECT RUNOFF AWAY FROM THE CONSTRUCTION AREA
3) CARE SHOULD BE TAKEN TO MINIMIZE CONSTRUCTION TRAFFIC OVER MOISTURE SENSITIVE SUBGRADE SOILS DURING WET WEATHER CONDITIONS.
4) THE STABILITY OF CONSTRUCTION EXCAVATIONS AND ASSOCIATED WORKER SAFETY ARE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH CURRENT OSHA REGULATIONS; THIS RESPONSIBILITY MAY REQUIRE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER BASED ON THE PREDOMINANT SOIL TYPES ENCOUNTERED. ACTUAL SUBSURFACE CONDITIONS AT THE TIME OF EXCAVATION SHOULD BE OBSERVED BY A GEOTECHNICAL ENGINEER TO DETERMINE WHETHER SLOPE FLATTENING, BRACING OR OTHER STABILIZATION IS NECESSARY DUE TO SEEPAGE OR OTHER UNEXPECTED CONDITIONS.
5) FINAL EXCAVATIONS SHALL BE COMPLETED WITH A SMOOTH-LIPPED BUCKETS IN FINE GRAINED SOILS SUCH AS SILTS & CLAYS. ANY AREAS OF RUTTING, EXCESSIVE DEFORMATION, OR OTHER NON-UNIFORM PERFORMANCE OF THE NATIVE SURFACE OR THE BACKFILL SHALL BE REMOVED AND REPLACED BY GRANULAR STRUCTURAL FILL

D. FOUNDATION & SLAB PREPARATION:
1) CONTINUOUS WALL AND SPREAD FOOTING FOUNDATIONS SHALL BE ESTABLISHED ON UNDISTURBED NATIVE. NOTIFY EOR IF ANY RUTTING, EXCESSIVE DEFORMATION, OR OTHER NON-UNIFORM PERFORMANCE OF THE NATIVE SURFACE IS OBSERVED
2)ALL INTERIOR FOOTINGS SHOULD HAVE A MINIMUM EMBEDMENT OF 1.0 FT BELOW FINISHED INTERIOR SURFACES. EXTERIOR WALL FOOTINGS SHOULD BE EMBEDDED TO ESTABLISH FROST PROTECTION.
3)BACKFILL COMPACTION WITHIN 5 FEET OF FOUNDATION WALLS SHOULD BE CONDUCTED USING HAND OPERATED TAMPING EQUIPMENT ONLY.
4) INTERIOR SLAB PREPARATION: THE SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH ITEM C1. AREAS OF UNSUITABLE FILL MATERIAL OR WHERE RUTTING, YIELDING, OR OTHER NON-UNIFORM SUBGRADE PERFORMANCE IS OBSERVED SHALL BE REMOVED & GRANULAR STRUCTURAL FILL OR APPROVED COMPACTED NATIVE SHALL BE INSTALLED TO GRADE ELEVATION. FOLLOWING THE SUBGRADE PREPARATION ANY SITE GRADING PER D6 BELOW SHALL BE COMPLETED. A NOMINAL 6-INCH THICK LAYER OF OPEN-GRADED ANGULAR CRUSHED ROCK TO BE INSTALLED FOR A CAPILLARY BREAK WITH 2 INCHES OF 3/4 INCH MINUS CRUSHED ROCK ABOVE TO PROVIDE A COMPACT SURFACE FOR CONSTRUCTION ACTIVITIES. THE SLAB-ON GRADE BASE COURSE SHOULD BE COMPACTED USING VIBRATORY COMPACTION METHODS UNTIL WELL KEYED. A VAPOR BARRIER PER B7 SHALL BE INSTALLED UNDER THE SLAB
5) EXTERIOR SLAB PREPARATION
(I) EXTERIOR SLABS AT ENTRYWAYS FIXED TO THE BUILDING SHALL BE PROTECTED AGAINST FROST HEAVES
(II) A MINIMUM OF 18" OF GRANULAR STRUCTURAL FILL SHALL BE INSTALLED UNDER A 6" LAYER OF OPEN GRADED ANGULAR ROCK UNDERNEATH SLABS. ALL ITEMS SHALL BE COMPACTED PER THE ABOVE SPECIFICATIONS.
6) IF GRADE NEEDS TO BE RAISED UNDER THE SLAB BETWEEN THE NATIVE & THE BASE OF THE CAPILLARY BREAK LAYER EITHER STRUCTURAL OR GRANULAR FILL PER B1 & B2 ABOVE SHALL BE INSTALLED.

E. QUALITY CONTROL SHALL BE COMPLETED PER THE REQUIREMENTS OF THE TESTING AND OBSERVATION NOTES.

5 SOILS & GEOTECHNICAL NOTES

1" = 1'-0"

PREFABRICATED WOOD TRUSSES

1. CODES AND FABRICATION: MANUFACTURER'S APPROVED ICBO PRODUCT EVALUATION REPORTS.
2. GRADE STAMPED DOUGLAS FIR/LARCH NO. 2 OR BETTER, OR AS REQ'D BY DESIGN.
3. DESIGN REQUIREMENTS:
TOP CHORD DEAD LOAD 8 PSF, BOTTOM CHORD DEAD LOAD 7 PSF
DEFLECTION: ROOF TOTAL LOAD DEFLECTION SHALL NOT EXCEED L/280,
LIVE LOAD DEFLECTION SHALL NOT EXCEED L/360.
4. CALCULATIONS & SHOP DRAWINGS: SUBMIT FOR REVIEW, SHOP DRAWINGS AND CALCULATIONS BY A LICENSED ENGINEER IN THE STATE OF THE PROJECT, FOR THE DESIGN LOADS, INCLUDING MAXIMUM REACTION, SHEAR, MOMENT, AND DEFLECTION IN COMPARISON TO THE ALLOWABLES. SIZE THE TOP CHORD FOR THE DIAPHRAGM NAILING AND A 2X MINIMUM NOMINAL WIDTH. THE TRUSSES SHOWN ON THE DRAWINGS ARE SCHEMATIC AND MAY REQUIRE SIZE OR SPACING MODIFICATIONS. VERIFY WITH BEARING LOCATIONS BEFORE MAKING ANY CHANGES.
5. BLOCKING, BRACING AND BRIDGING: AS REQUIRED BY THE MANUFACTURER'S APPROVED PRODUCT EVALUATION REPORTS, THE IBC, ICBO APPROVALS, THE CALCULATIONS AND THE DRAWINGS.
6. TRUSS CHANGES: OBTAIN WRITTEN CONSENT FROM THE TRUSS MFR ENGINEER TO CHANGE THE TRUSS TYPE, WIDTH, CHORD DEPTH, TRUSS SHAPE OR SPACING.
7. TRUSS MARKINGS: EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION WITHIN 2' OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD:
8. TRUSS MFR SHALL CERTIFY THAT ALL LOADING IS PER LOCAL CONDITIONS STATED ON 'STRUCTURAL LOAD INFORMATION' NOTE.
9. TRUSS MFR SHALL CERTIFY THAT THE CALCULATIONS REFLECT COMPLIANCE WITH THE LATEST EDITION OF IBC FOR UNBALANCED SNOW LOADS, FOR DRIFT LOADING, FOR IMPACT LOADING AS NOTED ON THE PLANS. ALL EAVES SHALL BE DESIGNED FOR 2 TIMES THE LIVE LOAD.
10. ALL TRUSS TO TRUSS CONNECTIONS SHALL BE THE SOLE RESPONSIBILITY OF THE TRUSS MANUFACTURER.
11. STAMPED SHOP DRAWINGS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AND ENGINEER FOR REVIEW BEFORE ANY FABRICATION.
12. TRUSS HANDLING AND JOB-SITE STORAGE SHALL BE PER TPI STANDARDS AND NOT AFFECT TRUSS PERFORMANCE.
13. CONFIRM WEIGHT, SIZE AND LOCATION OF MECHANICAL EQUIPMENT PRIOR TO DESIGN OF TRUSSES TO ENSURE POINT LOADS ARE ACCOUNTED FOR IN TRUSS DESIGN.
14. TRUSSES SHALL BE DESIGNED FOR THE SNOW LOADS PROVIDED ON 1/S0.0

6 PREFABRICATED TRUSS NOTES

1/2" = 1'-0"

SPECIAL INSPECTIONS & STRUCTURAL OBSERVATIONS: SCHEDULED BY CONTRACTOR & PAID FOR BY OWNER

SPECIAL INSPECTION

1) STRUCTURAL WOOD - PERIODIC INSPECTIONS OF HOLDOWN INSTALLATIONS, SHEAR WALL NAILING, ROOF DIAPHRAGM NAILING, COLLECTORS, DRAG STRUTS AND THEIR STRAPPING. THIS IS NOT REQUIRED WHERE THE SPACING OF THE NAILING ON THE SHEATHING IS MORE THAN 4" O.C.

VERIFICATIONS AND INSPECTIONS OF THE BUILDING ELEMENTS

SOILS: IBC 1704.7

BACKFILL - CONTINUOUS DURING OPERATION TO VERIFY USE OF PROPER MATERIALS, DENSITIES, LIFT THICKNESS AND COMPACTION.
SITE PREPARATION - PERIODIC TO VERIFY MATERIAL AT BASE OF EXCAVATION IS ADEQUATE TO ACHIEVE BEARING CAPACITY, EXCAVATION IS EXTENDED TO PROPER DEPTH AND REACH PROPER MATERIAL AND OBSERVATION OF SUBGRADE PRIOR TO BACK FILL HAS BEEN PREPARED PROPERLY

CONCRETE PER IBC 1705.3
1) PERIODIC INSPECTION OF REBAR PLACEMENT
2) PERIODIC INSPECTION OF CAST IN PLACE ANCHORS
3) PERIODIC INSPECTION OF POST INSTALLED ANCHORS
4) AT THE TIME OF FRESH CONCRETE PLACEMENT IT SHALL BE TESTED PER ACI 318 CHAPTER 5.
THE FOLLOWING STRENGTH TESTS SHALL BE CONDUCTED
(i) FOOTINGS/WALLS (1) TEST
(ii) SLAB (1) TEST
STRENGTH TESTS SHALL BE COMPLETED TO MEET THE REQUIREMENTS OF ASTM C172 & ACI 318 SECTION 5.6. THE ACCEPTANCE OF STRENGTH TESTS SHALL BE PER ACI 5.6.3.3

7 STATEMENT OF SPECIAL INSPECTIONS

1" = 1'-0"

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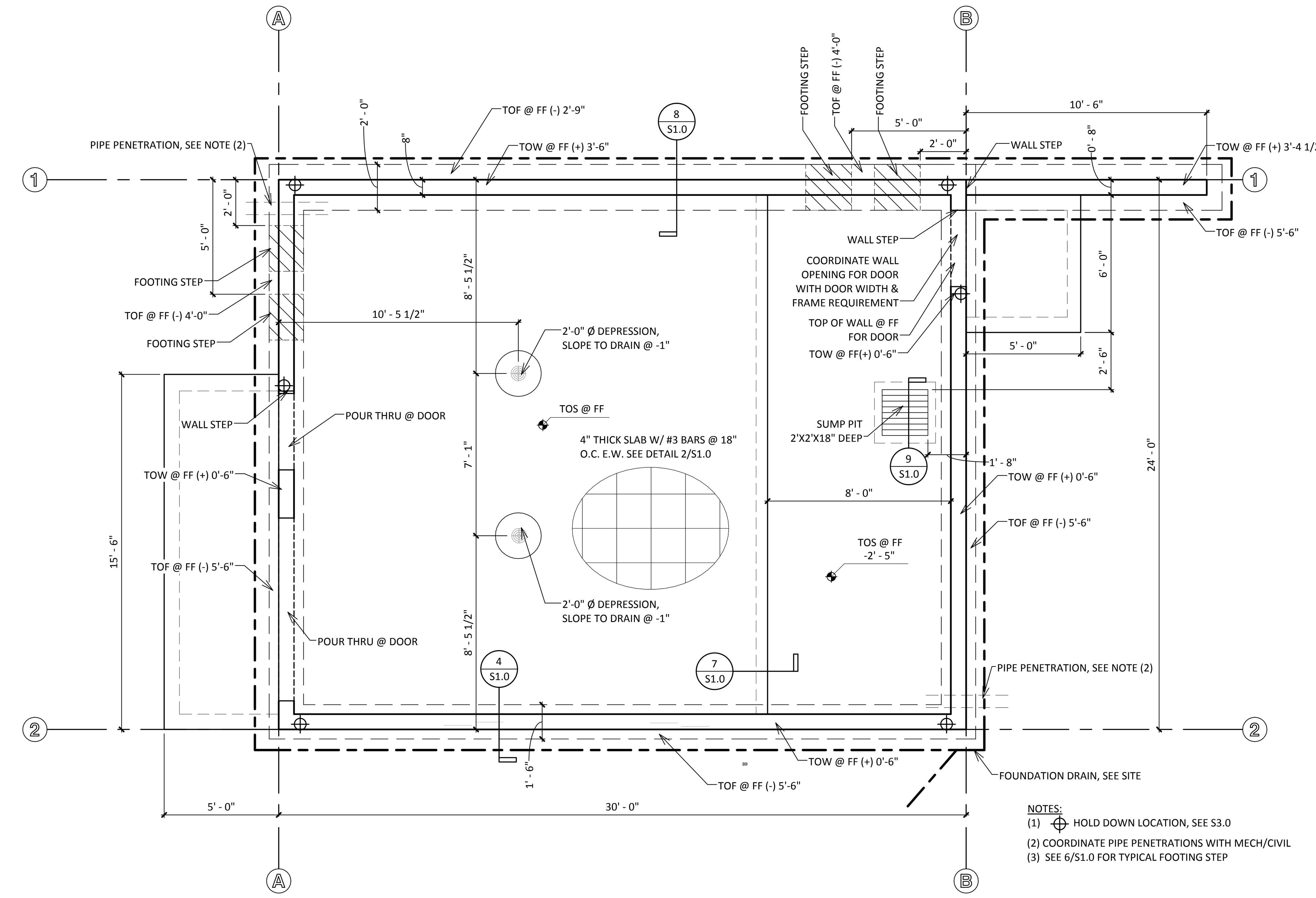
MONTANA FISH, WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
STRUCTURAL NOTES

DRAWN: JJK
CHECKED: KBH
DATE: 04/13/16
JOB#: 160208

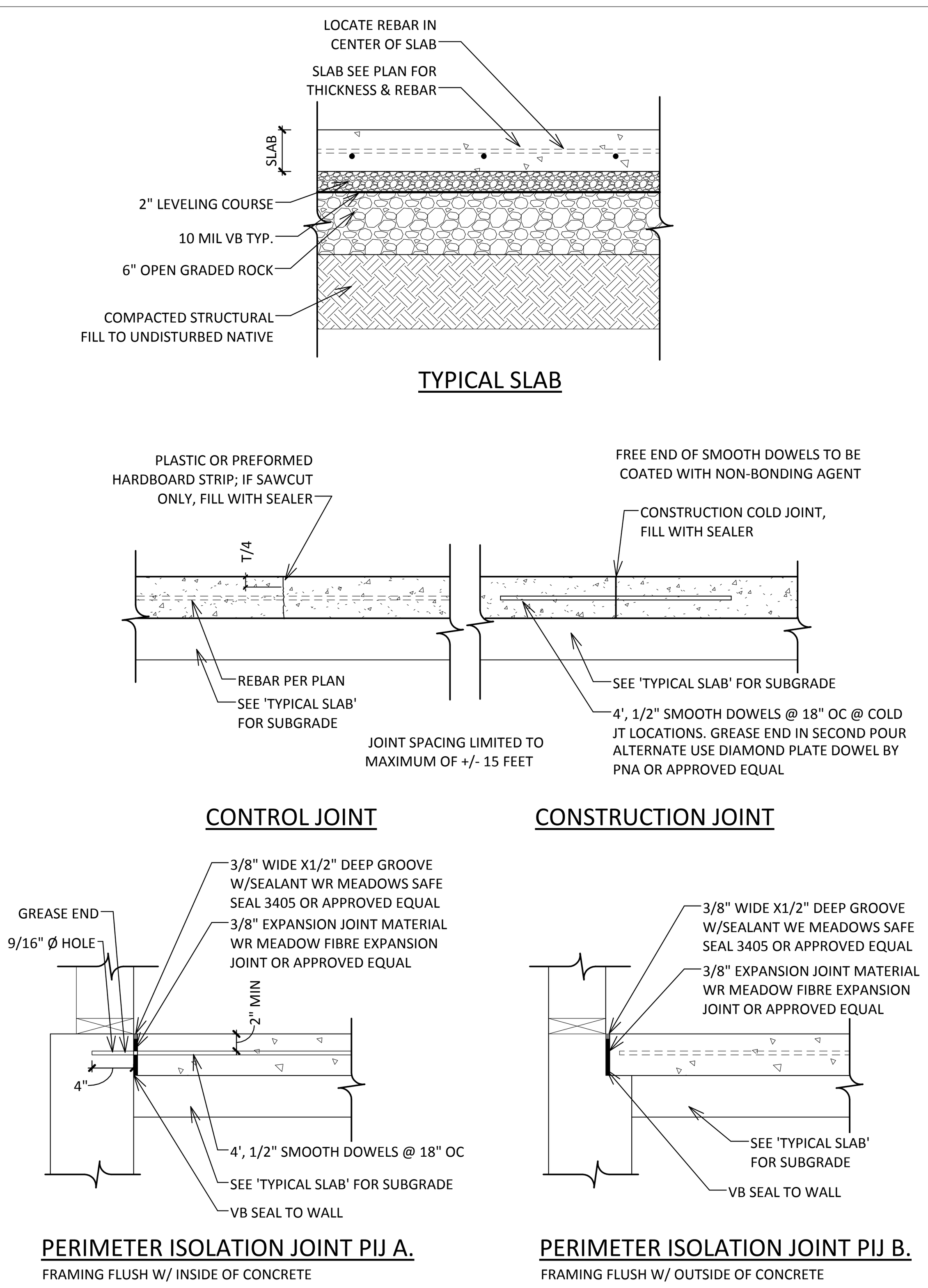
REVISIONS:

S0.0



1 FOUNDATION PLAN

1/4" = 1'-0"



2 SLAB AND CONTROL JOINTS

1" = 1'-0"

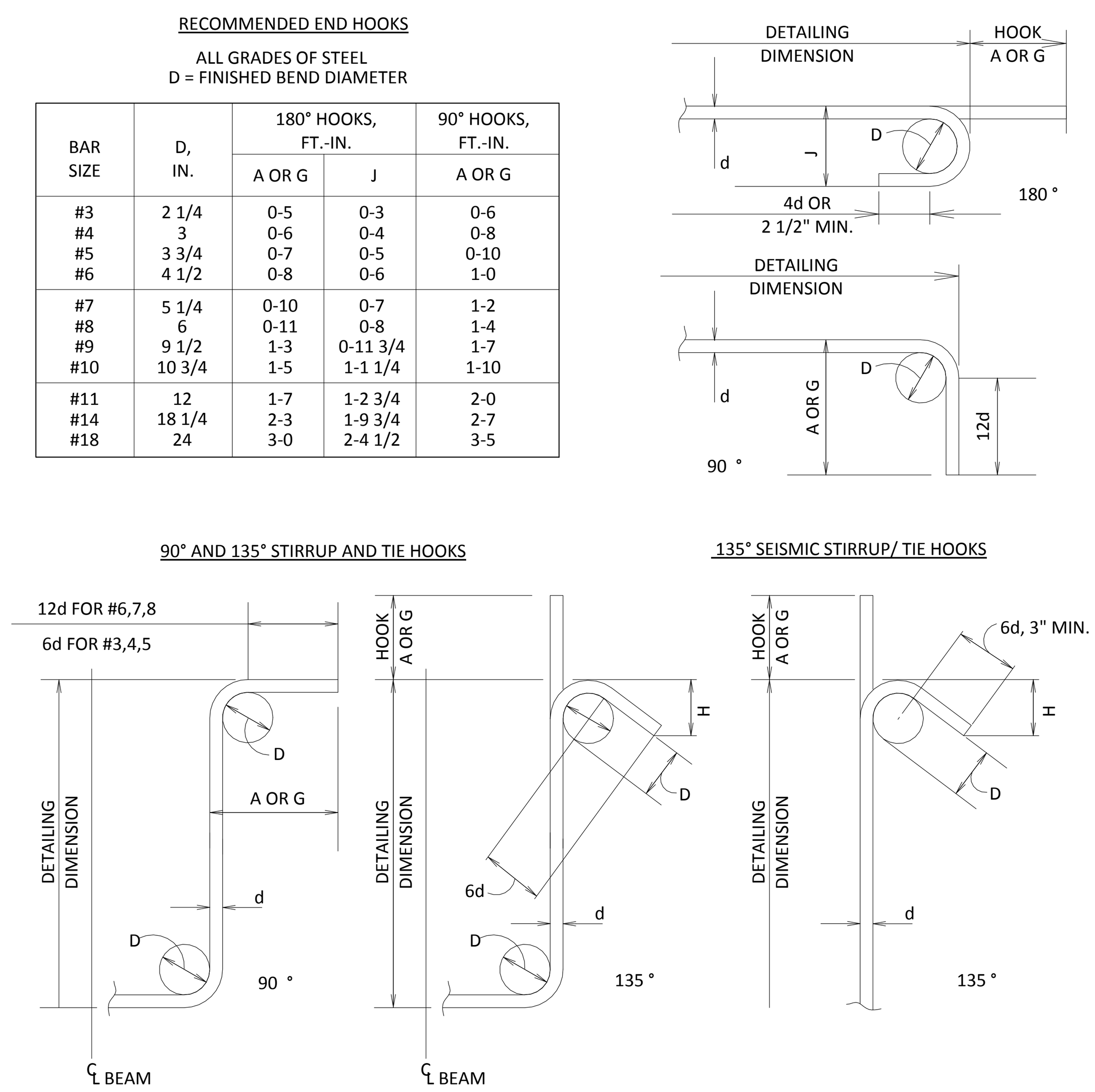
STANDARD HOOKS

ALL SPECIFIC DIMENSIONS RECOMMENDED BY CRSI BELOW MEET MINIMUM REQUIREMENTS OF ACI 318

RECOMMENDED END HOOKS

ALL GRADES OF STEEL
D = FINISHED BEND DIAMETER

BAR SIZE	D, IN.	180° HOOKS, FT.-IN.		90° HOOKS, FT.-IN.
		A OR G	J	A OR G
#3	2 1/4	0-5	0-3	0-6
#4	3	0-6	0-4	0-8
#5	3 3/4	0-7	0-5	0-10
#6	4 1/2	0-8	0-6	1-0
#7	5 1/4	0-10	0-7	1-2
#8	6	0-11	0-8	1-4
#9	9 1/2	1-3	0-11 3/4	1-7
#10	10 3/4	1-5	1-1 1/4	1-10
#11	12	1-7	1-2 3/4	2-0
#14	18 1/4	2-3	1-9 3/4	2-7
#18	24	3-0	2-4 1/2	3-5



STIRRUP (TIES SIMILAR) STIRRUP AND TIE HOOK DIMENSIONS

ALL GRADES OF STEEL

BAR SIZE	D, IN.	90° HOOK, IN.	135° HOOK, IN.	
		A OR G	A OR G	H (APPROX.)
#3	1 1/2	0-4	4	2 1/2
#4	2	0-4 1/2	4 1/2	3
#5	2 1/2	0-6	5 1/2	3 3/4
#6	4 1/2	1-0	8	4 1/2
#7	5 1/4	1-2	9	5 1/4
#8	6	1-4	10 1/2	6

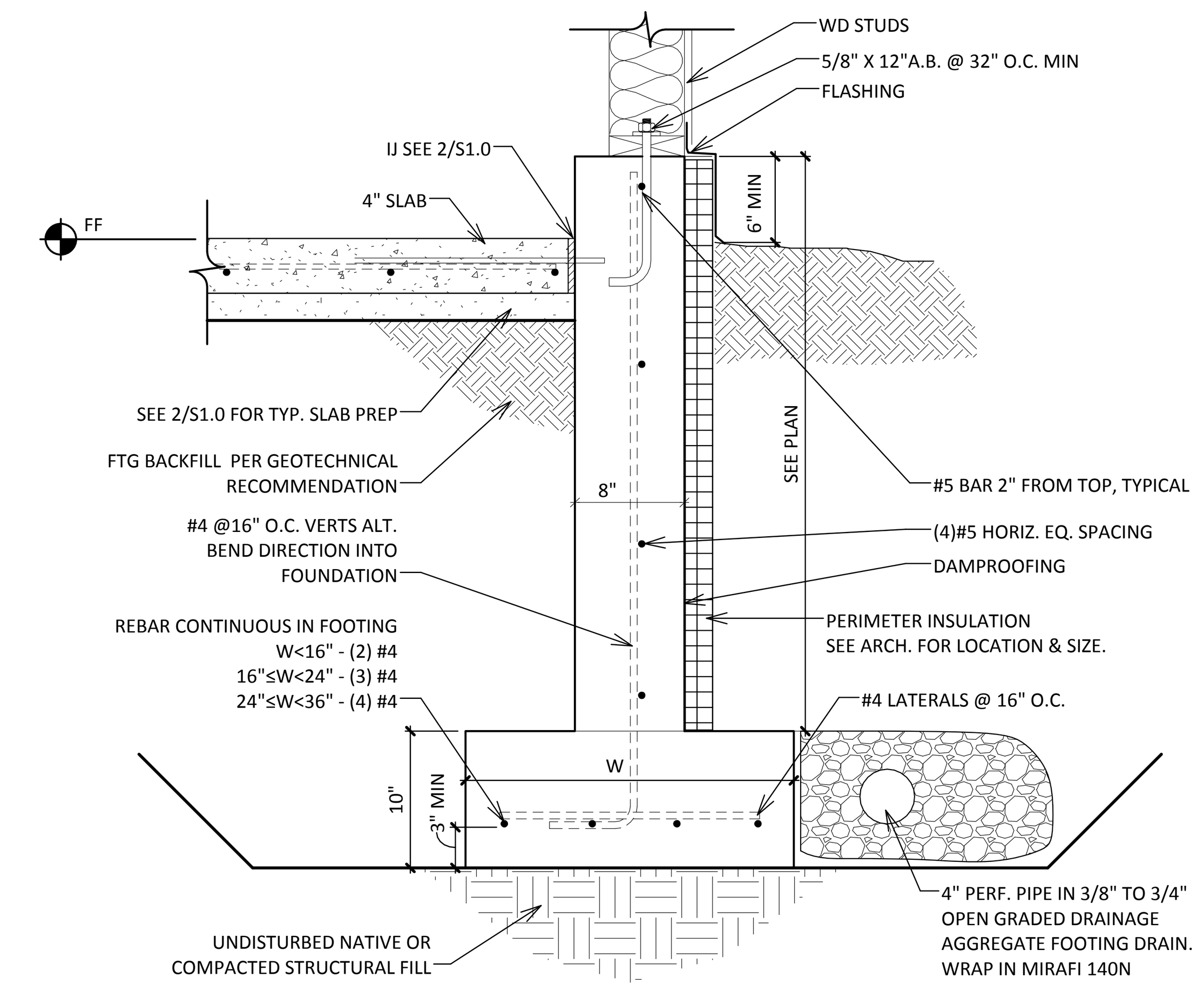
135° SEISMIC STIRRUP/ TIE HOOK DIMENSIONS

ALL GRADES OF STEEL

BAR SIZE	D, IN.	135° HOOK, IN.	
		A OR G	H (APPROX.)
#3	1 1/2	4 1/4	3
#4	2	4 1/2	3
#5	2 1/2	5 1/2	3 3/4
#6	4 1/2	8	4 1/2
#7	5 1/4	9	5 1/4
#8	6	10 1/2	6

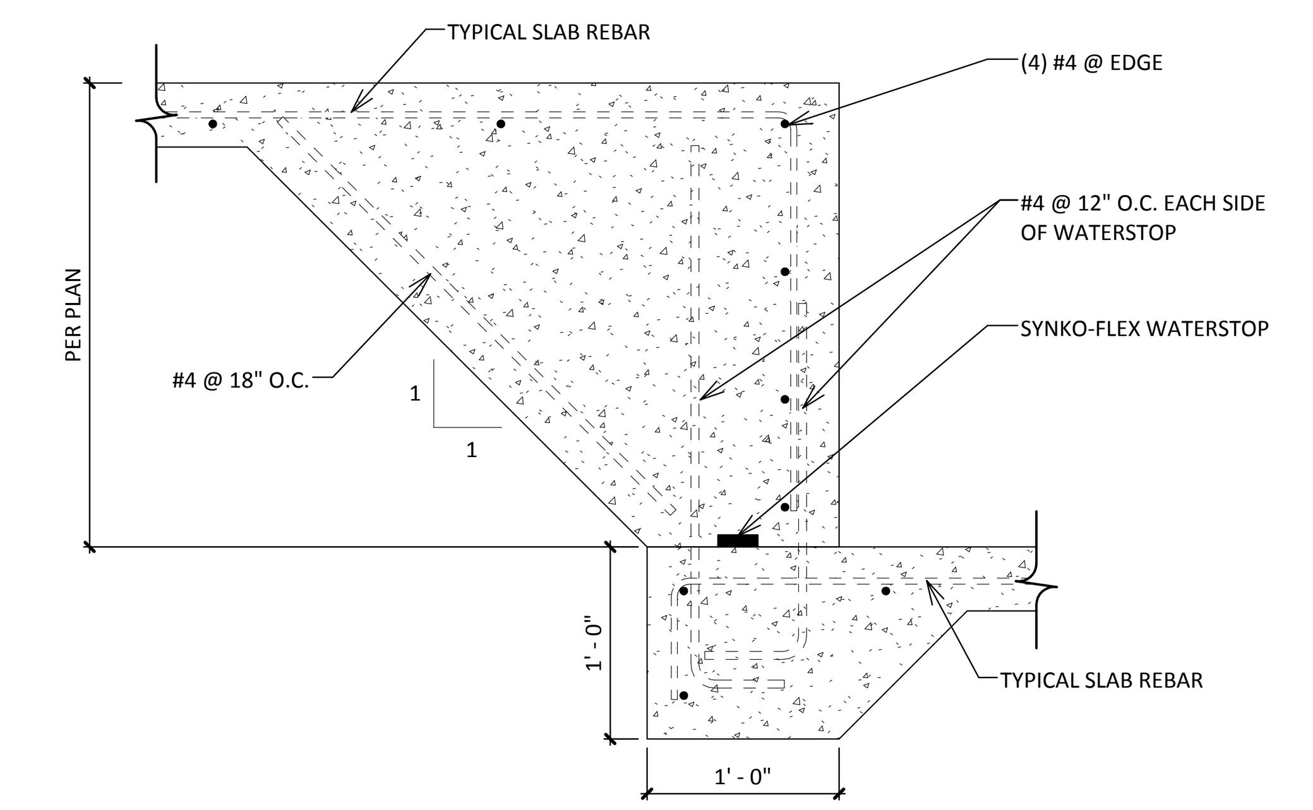
3 STANDARD HOOK DETAIL

1" = 1'-0"



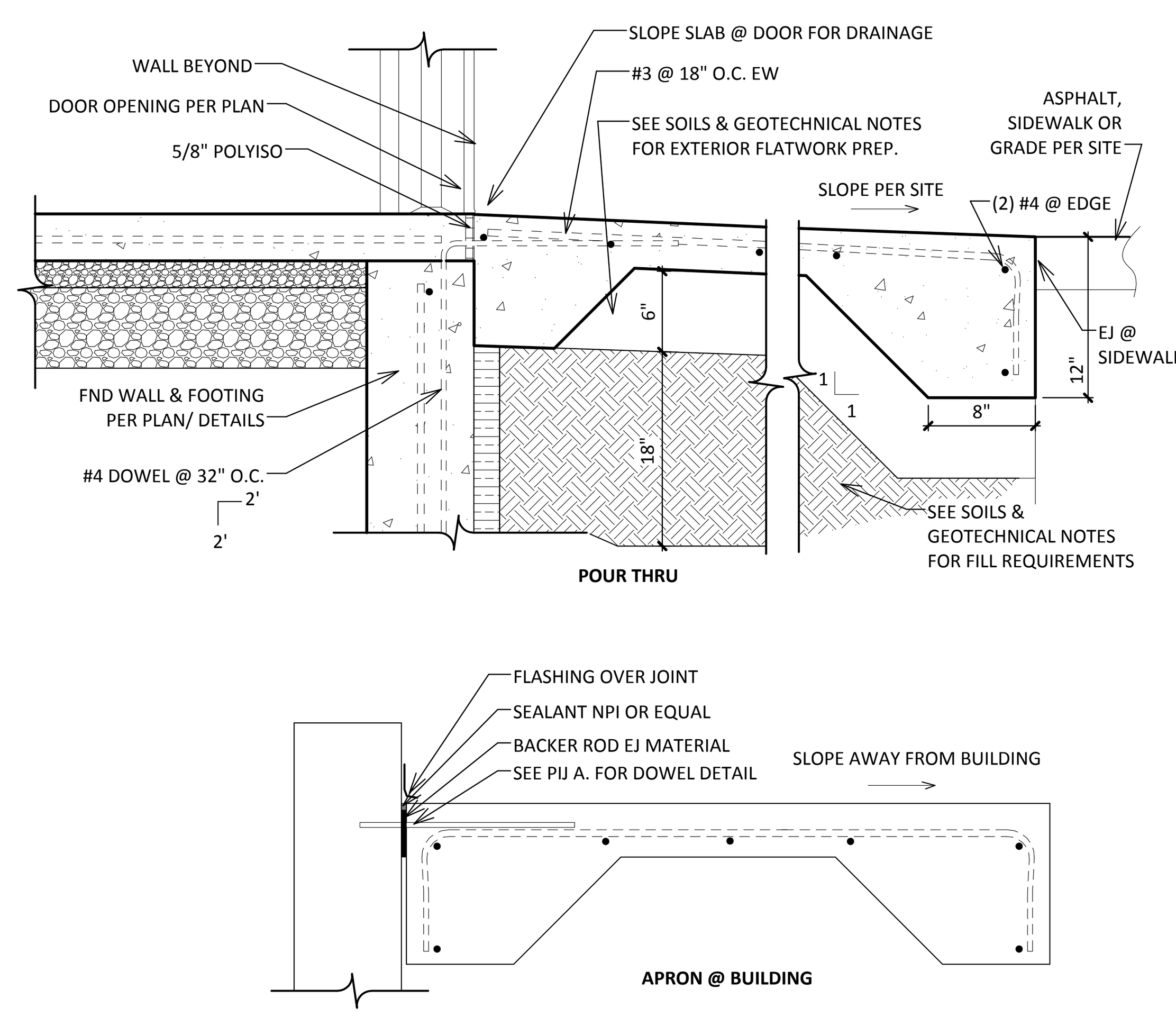
4 TYP. 8" FOUNDATION WALL DTL

1" = 1'-0"



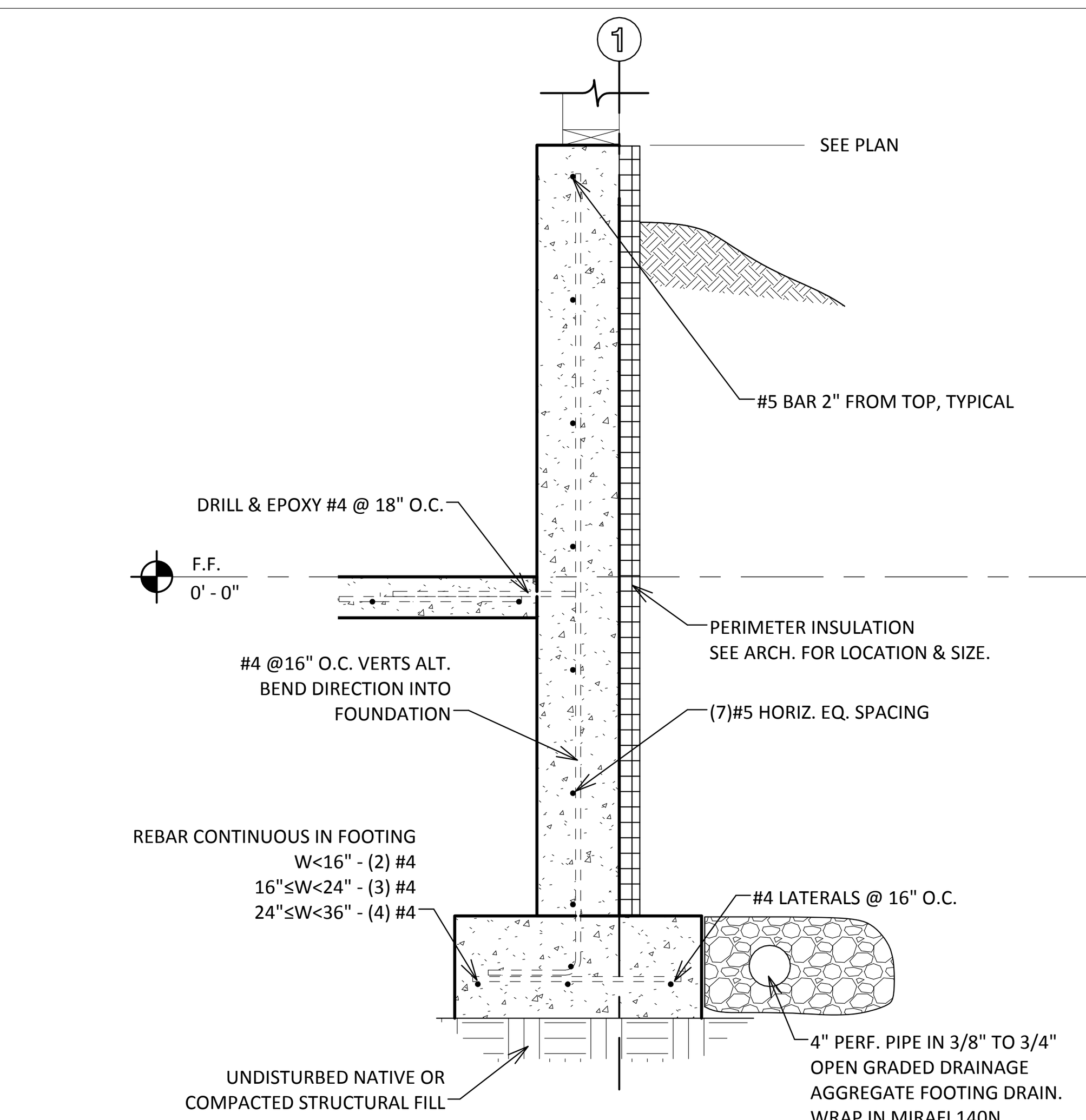
7 SLAB STEP

1" = 1'-0"



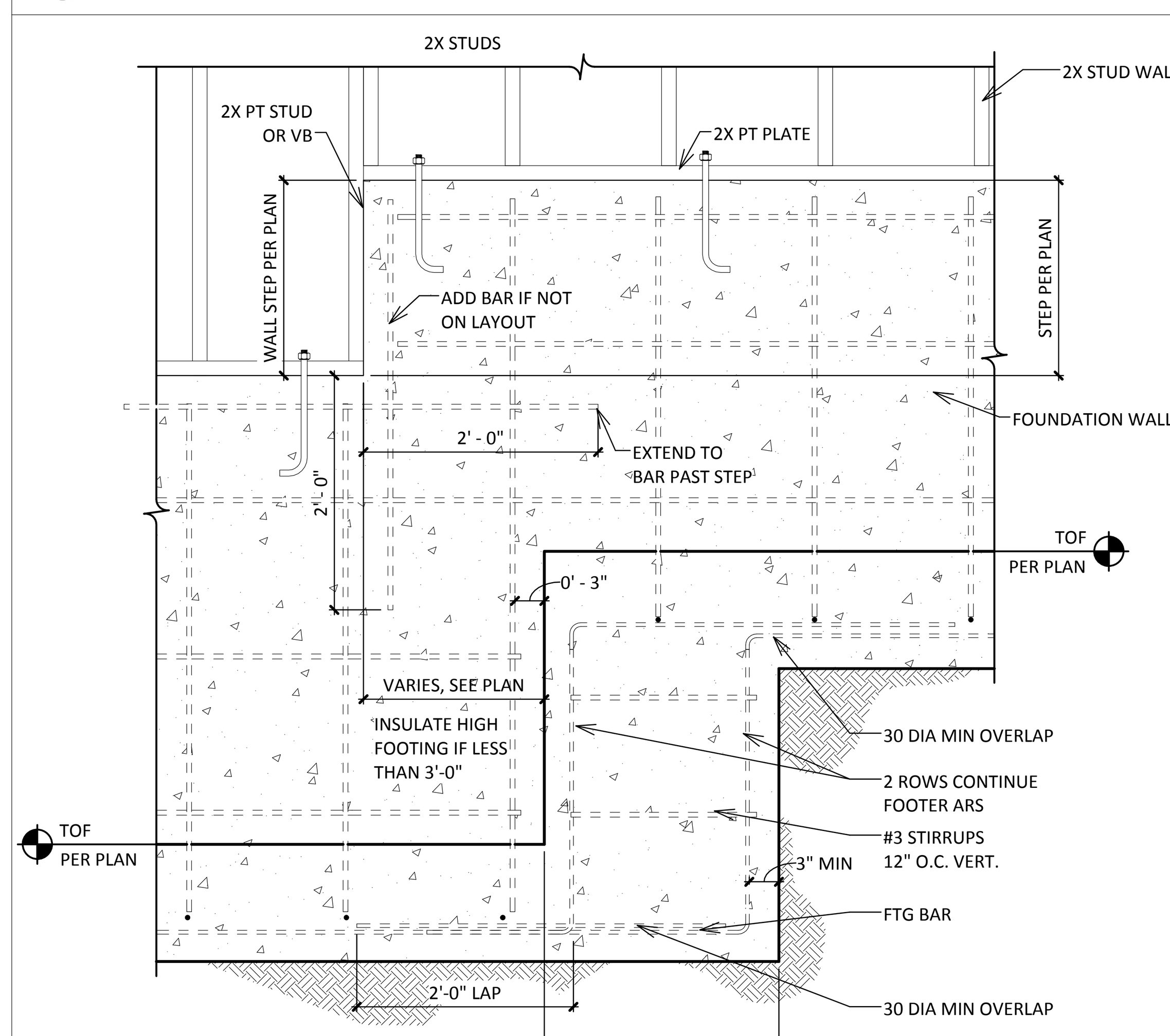
5 TYP. POUR THRU & APRON

1" = 1'-0"



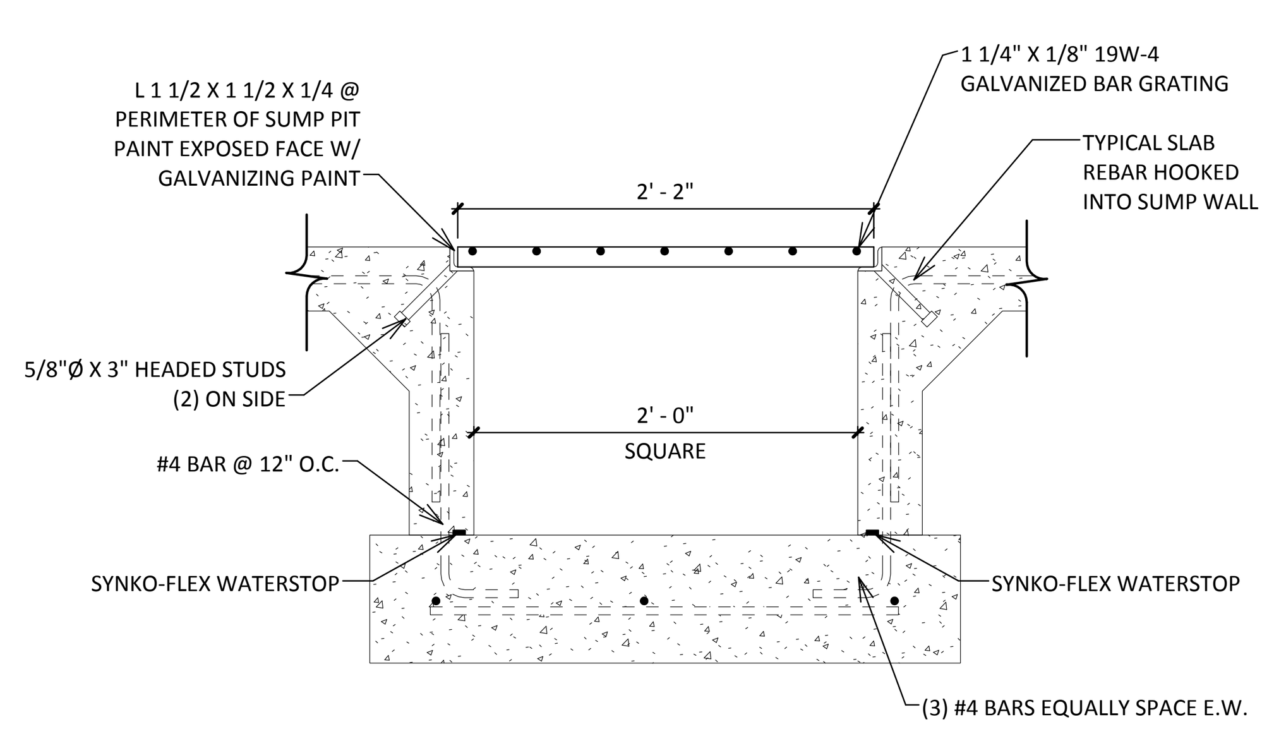
8 GRID 1 WALL

3/4" = 1'-0"



6 FOOTING & WALL STEP

3/4" = 1'-0"



9 SUMP PIT

1" = 1'-0"

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NEW FISH ISOLATION BUILDING

SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET

FOUNDATION PLAN

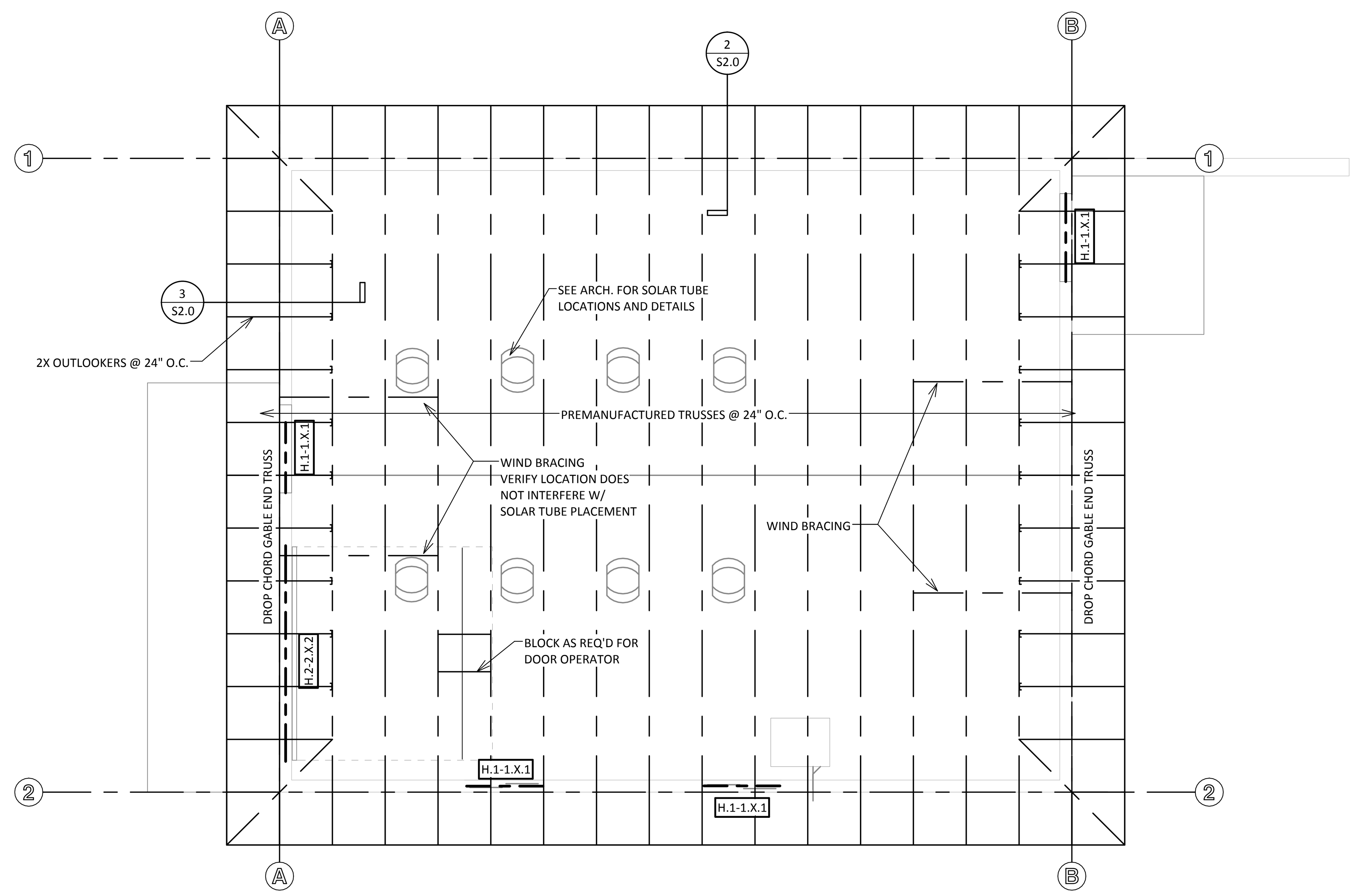
DRAWN: JJK
CHECKED: KBH
DATE: 04/13/16
JOB#: 150208

REVISIONS:

S1.0

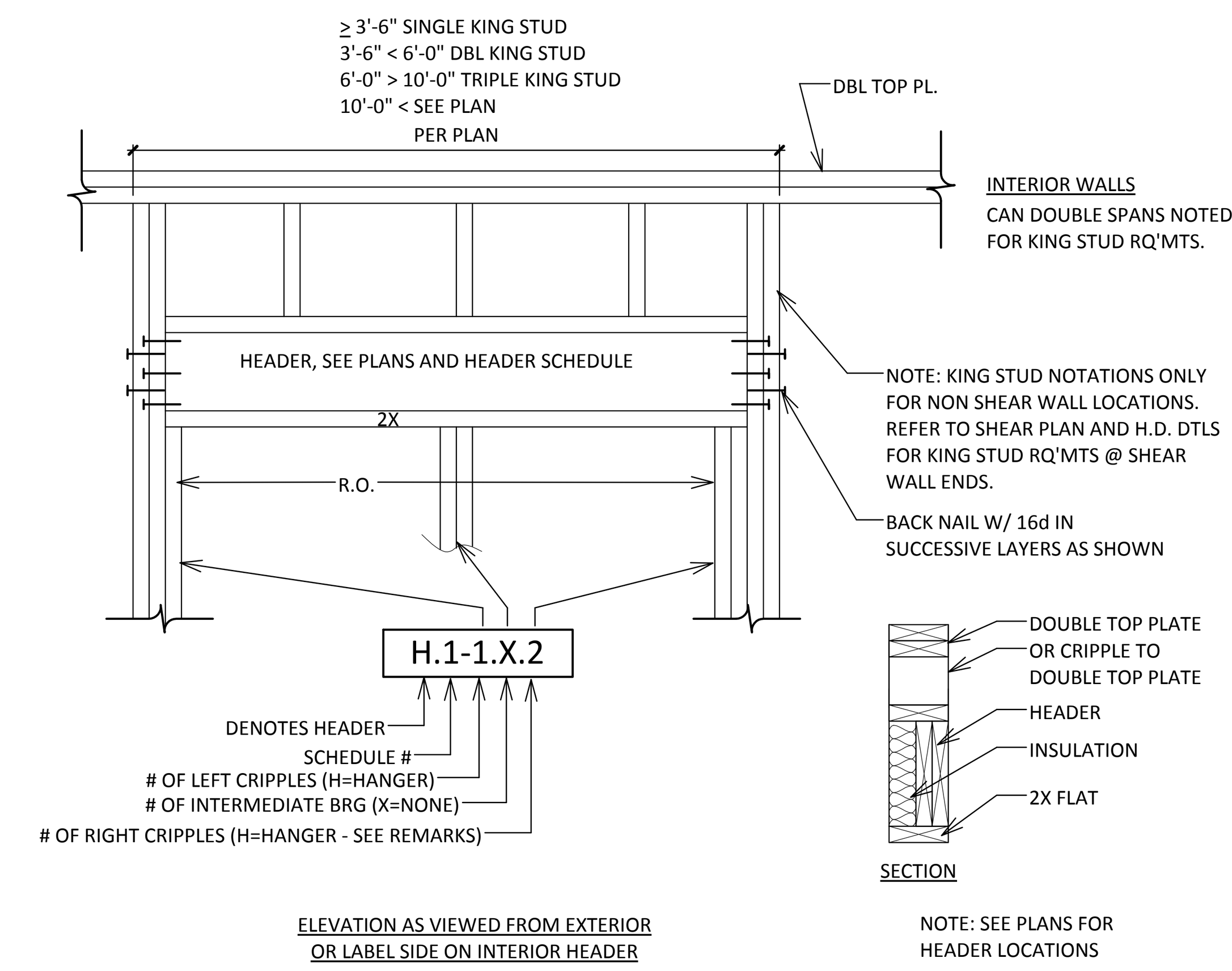
HEADER SCHEDULE			
TAG	HDR SIZE	SPEC	TRIMMERS
H1	(2) 2X6	D/F #2	2X6
H2	(3) 2X10	D/F #2	2X6

SEE CALLOUT FOR QUANTITY



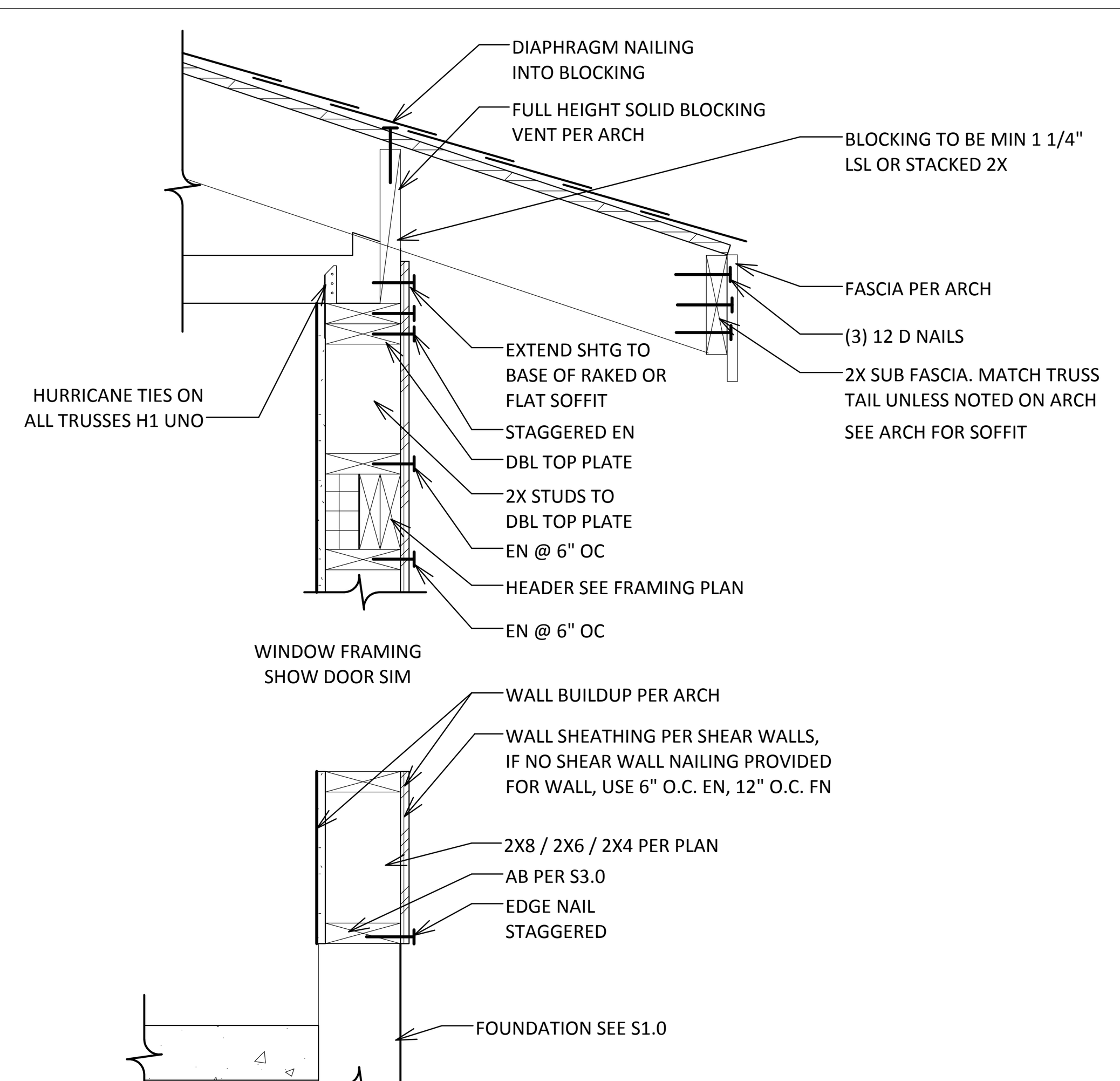
1 ROOF FRAMING PLAN

1/4" = 1'-0"



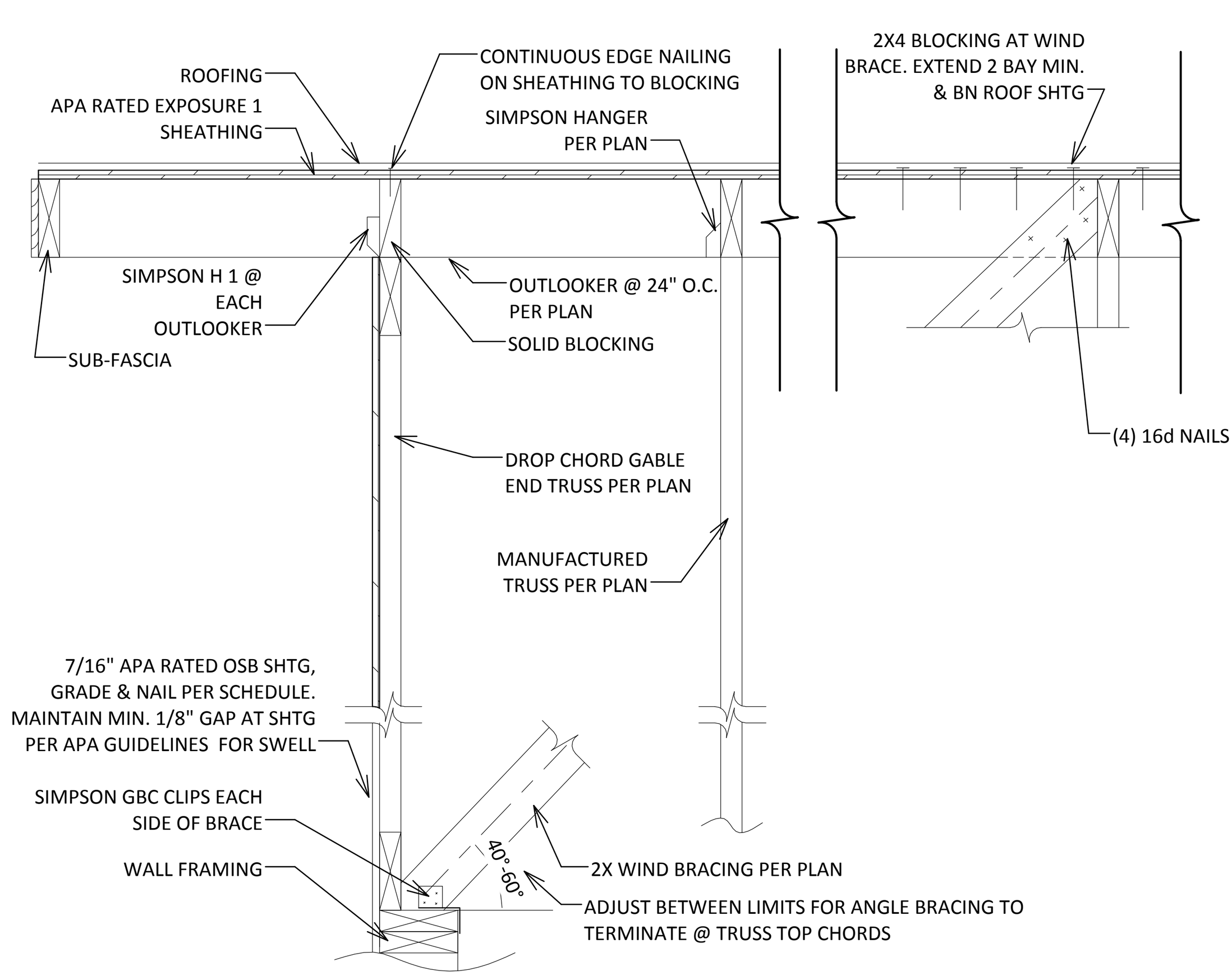
4 HEADER/BEAM DETAIL

3/4" = 1'-0"



2 DETAILED WOOD FRAMED WALL

1" = 1'-0"



3 TYP. OUTLOOKER DETAIL

1" = 1'-0"

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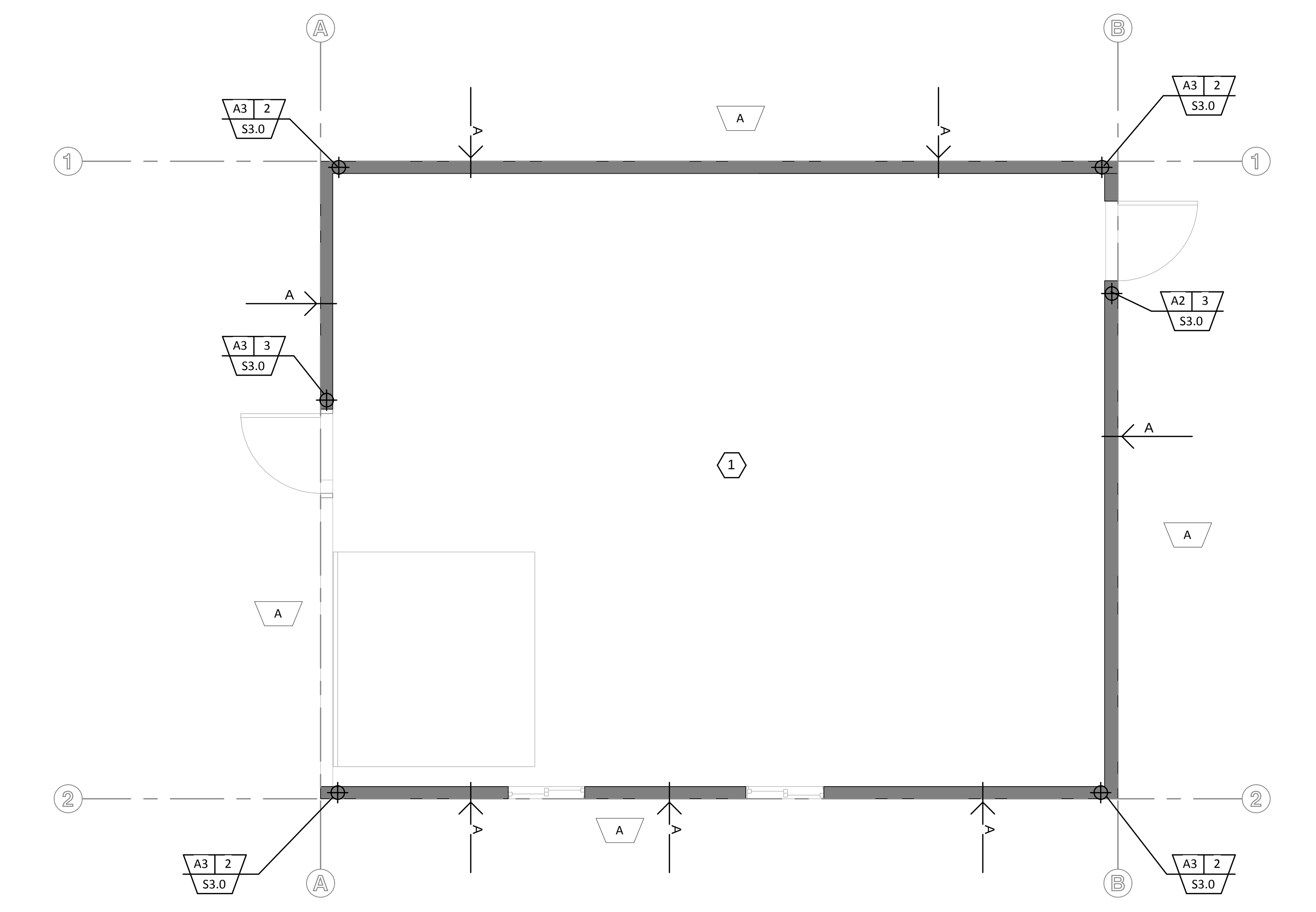
SHEET
ROOF FRAMING PLAN

DRAWN: JJK
CHECKED: KBH
DATE: 04/13/16
JOB#: 160208

REVISIONS:

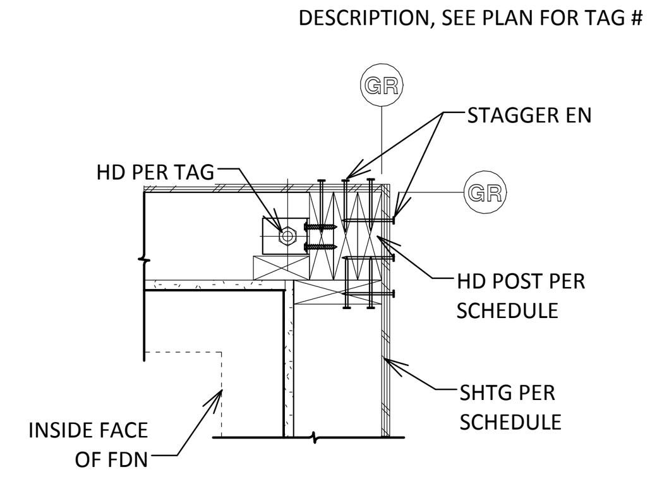
S2.0



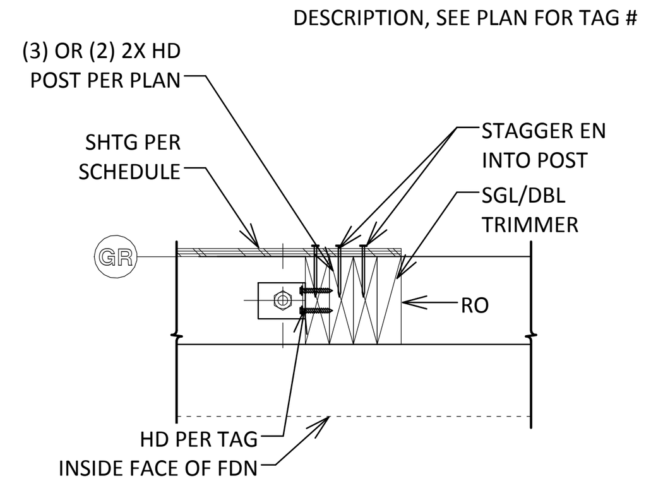
SHEAR PLAN LEGEND

HORIZ. DIAPHRAGM TAG, SEE DET. 4/S3.0	X (hexagon)
TOP PLATE CONN. TAG, SEE DET. 6/S3.0	X (trapezoid)
SHEAR WALL CALLOUT, SEE DET. 4/S3.0	A (arrow)
HOLD DOWN CALLOUT, SEE DET. 5/S3.0	⌖

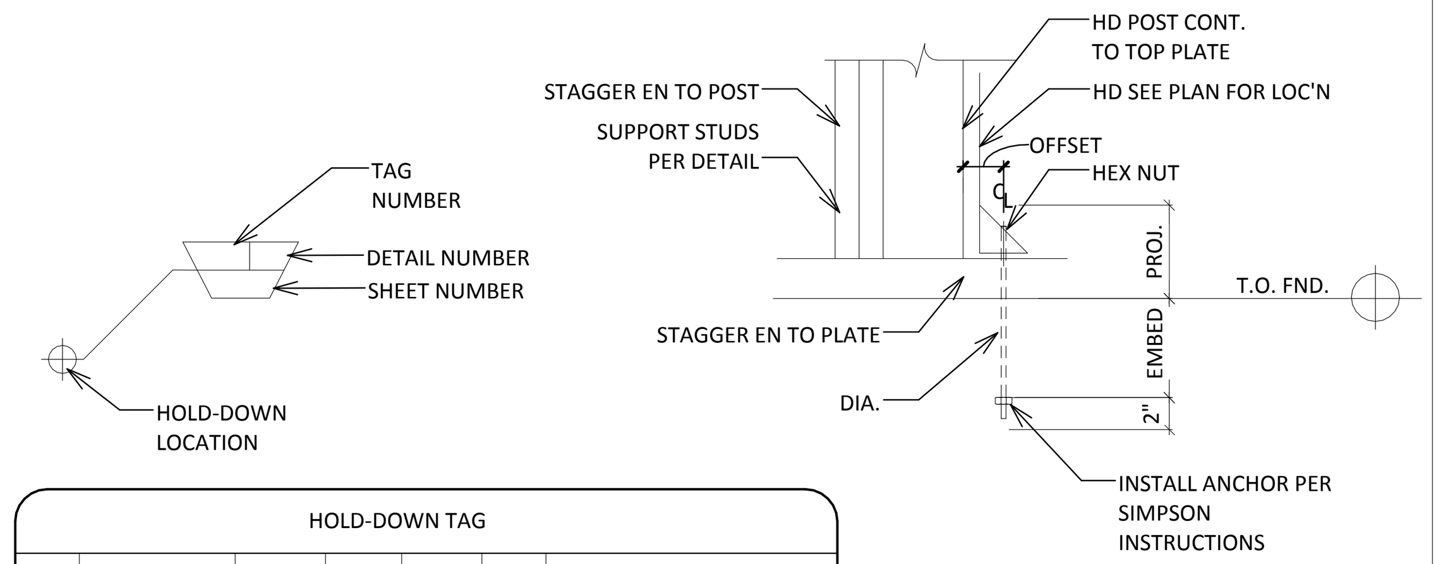
1 SHEAR PLAN
1/4" = 1'-0"



2 HOLDOWN DTL.



3 HOLDOWN DTL.

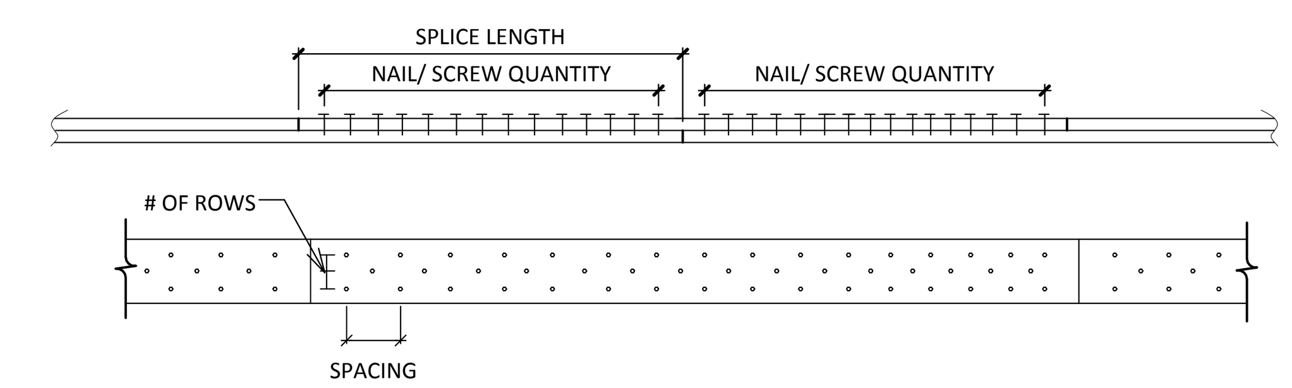


HOLD-DOWN TAG

TAG	HD	HD POST	OFFSET	PROJ.	DIA.	SIMPSON CONCRETE ANCHOR
A2	HDU2-SDS2.5	(2) 2X6	1 5/16"	6"	5/8"	SB 5/8 X 24
A3	HDU2-SDS2.5	(3) 2X6	1 5/16"	6"	5/8"	SB 5/8 X 24
B						
C						
D						
E						
F						

1. INSTALL HOLD-DOWN AFTER TIME HAS PASSED TO ALLOW SHRINKAGE TO OCCUR.
2. HOLES IN FRAMING MEMBERS SHALL BE NO GREATER THAN BOLT SIZE +1/16".
3. STEEL NYLON LOCKING NUTS OR THREAD ADHESIVE SHALL BE USED ON ANCHOR BOLTS.
4. A FINAL CHECK ON ALL BOLTED HOLD-DOWN CONNECTIONS SHALL OCCUR BEFORE CLOSING IN THE WALL TO ASSURE TIGHT ANCHORS. NUTS MAY LOOSEN WITH SHRINKAGE.
5. USE OVERSIZED WASHERS ON ALL HOLD-DOWNS THAT ARE BOLTED TO THE FRAMING.
6. USE CARE TO DRILL STRAIGHT HOLES THRU FRAMING MEMBERS WITH ONE PASS.
7. INSTALL ALL HOLD-DOWNS TO MFR RECOMMENDATIONS, FILL ALL HOLES ON NAILED/SCREWED HOLD-DOWNS.
8. ANCHOR BOLTS TO BE REPLACED BY ALL THREADS FOR ABOVE GRADE DETAILS.
9. HTT 4 MAY BE REPLACED BY HTT5

5 HOLD DOWN TAG TABLE
1" = 1'-0"

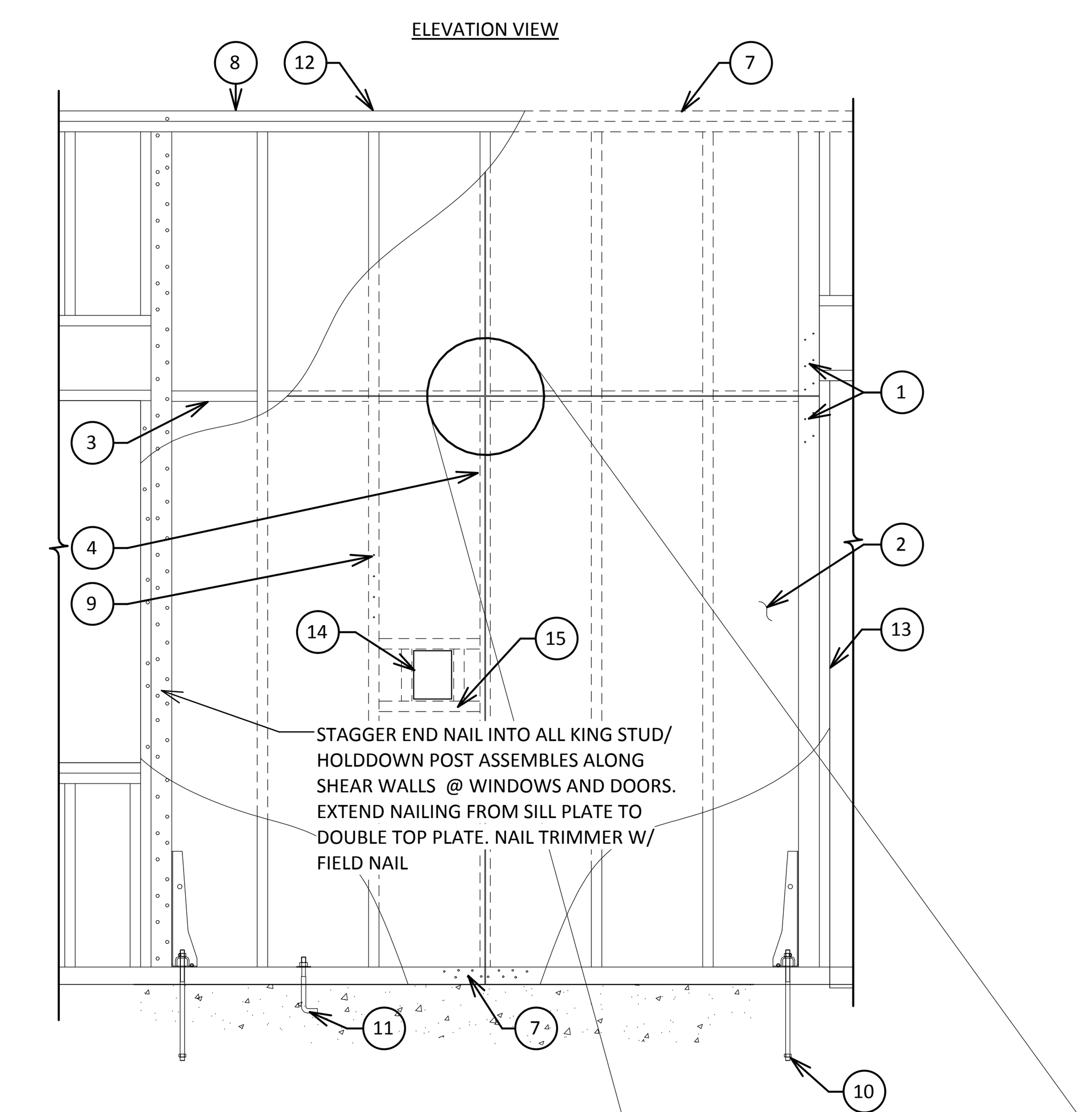


CONNECTION SCHEDULE

SHEAR REGION	MIN SPLICE '	# ROWS	SPCG	PLATE GRADE	NAIL/ SCREW	MIN # OF NAILS/ SCREWS PER SPLICE	COMMENTS
A	6'	2	3"	DF/L NO. 2+ OR HEM-FIR SS	16d	16	

* ALL NAILS 16d COMMON WIRE

6 TOP PLATE CONNECTION SCHEDULE
1/2" = 1'-0"



1. STAGGER EDGE NAIL (EN) SHTG TO HOLD-DOWN POSTS @ EACH BOUNDARY OF SHEAR WALL PER SCHEDULE
2. APA RATED SHEATHING PER THE SHEAR WALL SCHEDULE
3. BLOCKING REQUIRED (SIZE PER SCHEDULE) AT ALL HORIZONTAL SEAMS
4. SPECIAL FRAMING MEMBER(S) AT PANEL EDGES PER SCHEDULE
5. 1/8" GAP AT ALL PANEL EDGES - TYPICAL
6. SHEAR WALL NAILS PLACED NOT LESS THAN 3/8" FROM PANEL EDGE AND FIRMLY DRIVEN FLUSH INTO FRAMING MEMBER WITHOUT CRUSHING THE SURFACE OF THE SHEATHING
7. EDGE NAIL PER SCHEDULE
8. DBL TOP CHORDS, MIN. 6' LAP - SPLICE PER SCHEDULE
9. FIELD NAILING PER SCHEDULE
10. HOLD-DOWN AND ANCHORS PER SCHEDULE
11. ANCHOR BOLT SIZE & SPACING PER SCHEDULE; PLATE WASHERS REQUIRED
12. FRAMING PER SCHEDULE, DOUGLAS FIR/ LARCH NO. 2+
13. CRIPPLES PER H.D. DTLS AND HEADER SCHEDULE
14. MAX UNREINFORCED HOLE SIZE 4 1/2"X 4 1/2", NO OVERCUTTING PERMITTED
15. 2X BLOCKING FOR HOLES LARGER THAN 4 1/2"X 4 1/2". MAX ACCUMULATED LENGTH OF HOLE <20% OF SHEAR WALL LENGTH.
16. NO HOLES OR CUTTING OF SHEATHING WITHIN 16" OF CORNERS.

7 SHEAR WALL DETAIL
1/2" = 1'-0"

SHEAR WALL/ FRAME SCHEDULE

DENOTATION KEY
- DENOTES SCHEDULE SPECIFICATION
- INDICATES SIDE OF WALL TO BE SHEETED

APA CERTIFICATION KEY
- APA CERTIFICATION STAMP — APA THE ENGINEERED WOOD ASSOCIATION
- DENOTES RATED SHEATHING — RATED SHEATHING
- DENOTES SHEATHING THICKNESS — 15/32 INCH
- DENOTES ROOF/ FLOOR SPAN RATING — 32/16 SIZED FOR SPACING
- DENOTES SHEATHING EXPOSURE RATING — EXPOSURE 1
- DENOTES SHEATHING STRUCTURAL RATING — 000 STRUCTURAL 1 RATED
- PANELIZED ROOFS PRP-108 HUD-UM-40C

SHEAR WALL	APA RATED SHTG.	SHTG. TYPE	SIDES SHTD.	SILL	BLK'G PANEL EDGE	NAILS	EDGE NAIL	FIELD NAIL	STUD SPACING	A.B. SIZE	A.B. SPACING
SW-A	7/16"	EXP. 1	SGL	2X	2X	8d	6"	12"	16"	5/8"X12"	32"

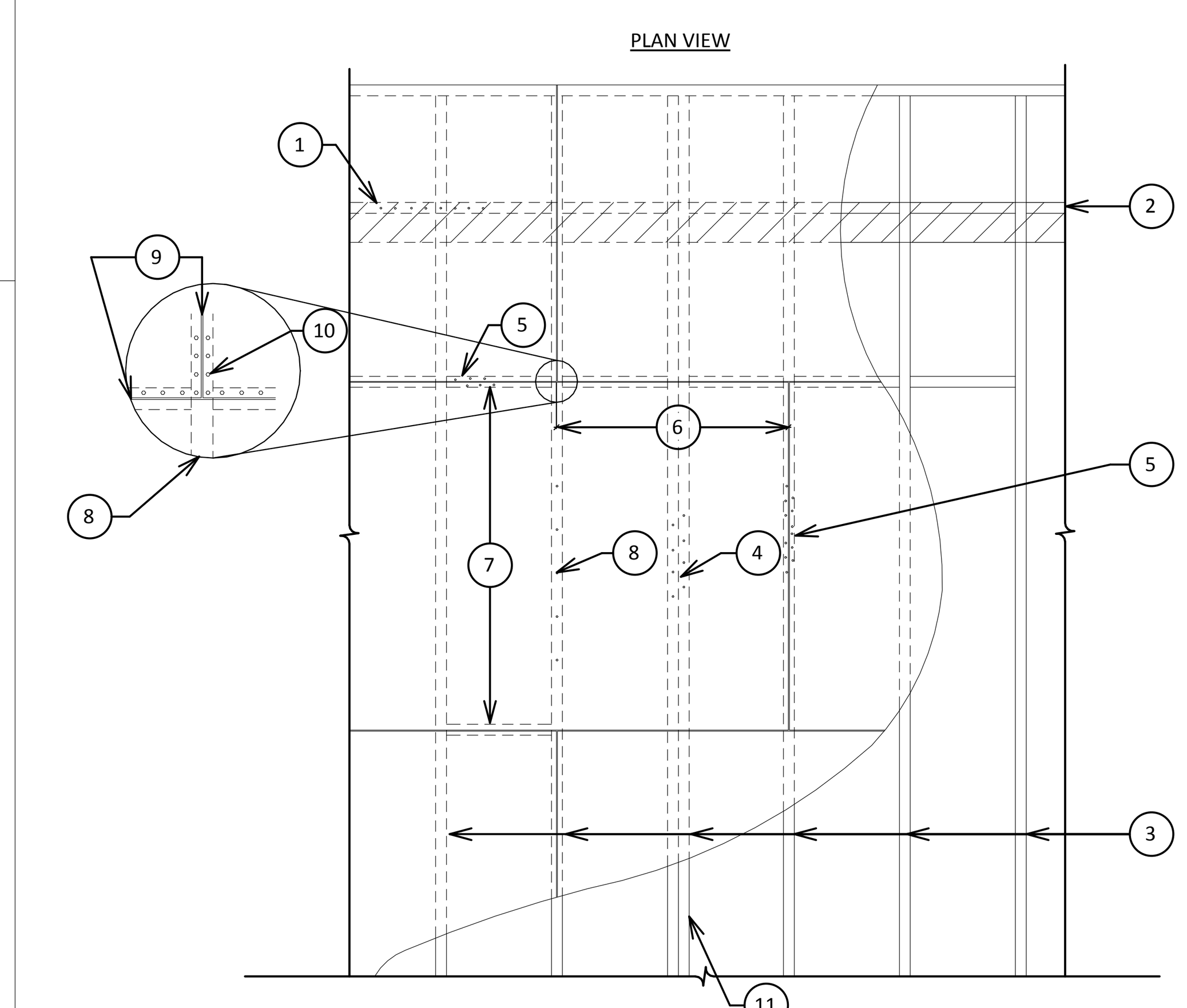
- REFER TO DETAIL 7/ S3.0 FOR FURTHER REQUIREMENTS
1) ALL NAILS ARE COMMON WIRE UNLESS NOTED OTHERWISE
2) REFER TO TYPICAL SHEAR WALL FRAMING DTL FOR FURTHER REQUIREMENTS
3)

HORIZONTAL DIAPHRAGM NAILING SCHEDULE

TAG	BLOCKING	APA RATED SHTG	SPAN RATING	NAILS	EDGE NAIL	BOUNDARY	FIELD NAIL	NOTES
1	NONE	19/32" EXP. 1	40/20	8d	6"	6"	12"	USE PLYWOOD SPACING CLIPS

NOTE: BOLD LINES ON SHEAR PLAN DENOTE REGION. SEE DETAIL 8/S3.0 FOR TYPICAL DETAILS

4 SHEAR WALL SCHEDULE
1/8" = 1'-0"



1. BOUNDARY NAIL TO WALL BLOCKING PER SCHEDULE
2. EXTERIOR WALL OR INTERIOR SHEAR WALL
3. TYPICAL FRAMING MEMBERS ON LAYOUT
4. BOUNDARY NAIL SHTG TO ALL COLLECTORS PER PLAN
5. EDGE NAIL EACH SHEET TO COMMON FRAMING MEMBER
6. STAGGER SHEETS ACROSS FRAMING
7. BLOCK LONGITUDINAL SEAMS WHEN SCHEDULED
8. FIELD NAILING PER SCHEDULE
9. GAP SHEETS 1/8" FOR SWELLING
10. NAILS TO BE DRIVEN FLUSH W/ NO CRUSHING OF SHEETING AND A MIN OF 3/8" FROM EDGE.
11. STRUT, TIE, OR COLLECTOR ELEMENT PER PLAN

8 HORIZONTAL DIAPHRAGM
1/2" = 1'-0"

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SHEET
SHEAR PLAN

DRAWN: JJK
CHECKED: KBH
DATE: 04/13/16
JOB#: 160208

REVISIONS:

S3.0

GENERAL PLUMBING NOTES:

1. ALL PLUMBING AND PRACTICE TO BE IN ACCORDANCE WITH CURRENT UNIFORM PLUMBING CODE.
2. COMPLETE INSTALLATION OF PLUMBING SYSTEM TO CONFORM TO STATE BUILDING, MECHANICAL ENERGY, FIRE, AND HEALTH CODES, AND REGULATIONS ADOPTED BY LOCAL JURISDICTIONS.
3. MECHANICAL SYSTEMS AS SHOWN ARE SCHEMATIC IN NATURE AND ITEMS NOT SPECIFICALLY CALLED FOR OR SHOWN, BUT REQUIRED FOR INSTALLATION FOR THE COMPLETE MECH. SHALL BE PROVIDED, AND ARE REQUIRED AS PART OF THE CONTRACT. MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY STANDARDS SHALL APPLY.
4. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
5. CONTRACTOR RESPONSIBILITY TO VERIFY QUANTITIES.
6. MAINTAIN A MINIMUM OF 6'-0" OF GROUND COVER OVER ALL UNDERGROUND WATER MAINS AND A MINIMUM OF 3'0" OF GROUND COVER OVER ALL UNDERGROUND SEWERS AND DRAINS.
7. INSTALL ALL PIPING WITHOUT FORCING OR SPRINGING.
8. ALL PIPING SHALL CLEAR DOORS AND WINDOWS.
9. ALL PIPING SHALL GRADE TO LOW POINTS. PROVIDE HOSE END DRAIN VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
10. SUBCONTRACTOR SHALL COORDINATE WITH GENERAL AND VERIFY ALL ROUTING AND SUPPORT SYSTEMS & INCLUDE IN HIS BID ALL NECESSARY TO PROVIDE THE OWNER WITH A COMPLETE SYSTEM.
11. ALL PIPING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
12. ALL "OR EQUAL" FIXTURES AND ACCESSORIES TO BE APPROVED BY ARCHITECT OR ENGINEER.
13. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL FIXTURES SHALL BE WHITE.
14. IT IS UNLAWFUL TO CONCEAL CRACKS, HOLES, OR OTHER IMPERFECTIONS IN MATERIALS BY WELDING, BRAZING, OR SOLDERING OR BY USING THEREIN OR THEREON ANY PAINT, WAX, TAR, OR OTHER LEAK-SEALING OR REPAIR AGENT.
15. BURRED ENDS OF ALL PIPE AND TUBING SHALL BE REAMED TO THE FULL BORE OF THE PIPE.
16. PLUMBING SYSTEMS SHALL BE INSTALLED IN A MANNER CONFORMING TO THE 2012 UPC AND THE MANUFACTURER'S RECOMMENDATIONS. IN INSTANCES WHERE THE CODE AND THE MANUFACTURER'S INSTRUCTIONS CONFLICT, THE MORE STRINGENT PROVISIONS SHALL PREVAIL.
17. ALL VALVES, PIPES, AND FITTINGS SHALL BE INSTALLED IN CORRECT RELATIONSHIP TO THE DIRECTION OF FLOW.
18. NO PIPING SHALL BE DIRECTLY EMBEDDED IN CONCRETE OR MASONRY. NO STRUCTURAL MEMBER SHALL BE SERIOUSLY WEAKENED OR IMPAIRED BY CUTTING, NOTCHING OR OTHERWISE.
19. PIPING SUBJECT TO UNDUE CORROSION, EROSION, OR MECHANICAL DAMAGE SHALL BE PROTECTED IN AN APPROVED MANNER.
20. NO WATER, SOIL, OR WASTE PIPE SHALL BE INSTALLED OR PERMITTED OUTSIDE A BUILDING OR IN AN EXTERIOR WALL UNLESS, WHERE NECESSARY, ADEQUATE PROVISION IS MADE TO PROTECT SUCH PIPE FROM FREEZING.
21. ALL PIPE PENETRATING FLOOR/CEILING ASSEMBLIES AND FIRE-RESISTANCE RATED WALLS OR PARTITIONS SHALL BE PROTECTED WITH THE REQUIREMENTS OF THE BUILDING CODE.
22. SLEEVES SHALL BE PROVIDED TO PROTECT ALL PIPING THROUGH CONCRETE OR MASONRY EXTERIOR OR BEARING WALLS, AND SHALL BE SIZED SO THERE IS A MINIMUM 1/2" CLEARANCE AROUND THE PIPE AND/OR INSULATION.
23. PIPING THROUGH CONCRETE OR MASONRY WALLS SHALL NOT BE SUBJECT TO ANY LOAD FROM BUILDING CONSTRUCTION.
24. ALL PIPING SHALL BE SUPPORTED IN SUCH A MANNER AS TO MAINTAIN ITS ALIGNMENT, AND PREVENT SAGGING.
25. PIPING IN THE GROUND SHALL BE LAID ON A FIRM BED FOR ITS ENTIRE LENGTH. WHERE SUPPORT IS OTHERWISE PROVIDED, IT SHALL BE ACCEPTABLE TO THE ADMINISTRATIVE AUTHORITY.
26. HANGERS AND ANCHORS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE WEIGHT OF THE PIPE AND ITS CONTENTS. PIPING SHALL BE ISOLATED FROM INCOMPATIBLE MATERIALS.
27. THREADS ON IRON PIPE SIZE (IPS) PIPE AND FITTINGS SHALL BE STANDARD TAPER PIPE THREADS. THREADS ON TUBING SHALL BE APPROVED TYPES. THREADS ON PLASTIC PIPE SHALL BE FACTORY CUT OR MOLDED. THREADED PLASTIC PIPE SHALL BE SCHEDULE 80 MINIMUM WALL THICKNESS. TUBING THREADS SHALL CONFORM TO FINE TUBING THREAD STANDARDS. WHEN A PIPE JOINT MATERIAL IS USED, IT SHALL BE APPLIED ONLY ON MALE THREADS AND SUCH MATERIALS SHALL BE APPROVED TYPES, INSOLUBLE IN WATER, AND NONTOXIC. CLEANOUT PLUGS AND CAPS SHALL BE LUBRICATED WITH WATER INSOLUBLE, NON-HARDENING MATERIAL OR TAPE.
27. JOINTS IN COPPER TUBING SHALL BE MADE BY THE APPROPRIATE USE OF APPROVED COPPER OR COPPER ALLOY FITTINGS. SURFACES TO BE JOINED BY SOLDERING SHALL BE CLEANED BRIGHT BY MANUAL OR MECHANICAL MEANS. THE JOINTS SHALL BE PROPERLY FLUXED WITH AN APPROVED TYPE FLUX, AND MADE UP WITH APPROVED SOLDER. ALL SOLDER AND FLUXES SHALL BY MANUFACTURED TO APPROVED STANDARDS.
28. SOLDERS AND FLUXES WITH A LEAD CONTENT WHICH EXCEEDS TWO-TENTHS (0.20) OF ONE (1) PERCENT ARE PROHIBITED IN PIPING SYSTEMS USED TO CONVEY POTABLE WATER.
29. JOINTS FROM COPPER TUBING TO THREADED PIPE SHALL BE MADE BY THE USE OF BRASS ADAPTER FITTINGS.
30. APPROVED UNIONS MY BE USED IN DRAINAGE WORK WHEN ACCESSIBLY LOCATED IN THE TRAP SEAL OR BETWEEN A FIXTURE AND ITS TRAP; IN THE VENT SYSTEM, EXCEPT UNDERGROUND OR IN WET VENTS; AT ANY POINT IN THE WATER SUPPLY SYSTEM.
31. WHEN CONNECTING PLASTIC PIPE TO OTHER TYPES OF PIPING USE ONLY APPROVED TYPES OF FITTINGS AND ADAPTERS DESIGNED FOR THE SPECIFIC TRANSITION INTENDED.

TRAPS AND INTERCEPTOR NOTES:

1. EACH PLUMBING FIXTURE, EXCEPTING THOSE HAVING INTEGRAL TRAPS, SHALL BE SEPARATELY TRAPPED BY AN APPROVED TYPE WATERSEAL TRAP. NOT MORE THAN ONE (1) TRAP SHALL BE PERMITTED ON A TRAP ARM.
2. THE VERTICAL DISTANCE BETWEEN A FIXTURE OUTLET AND THE TRAP WEIR SHALL BE AS SHORT AS PRACTICABLE, BUT IN NO CASE SHALL THE TAILPIECE FROM ANY FIXTURE EXCEED TWENTY-FOUR (24) INCHES IN LENGTH.
3. EACH PLUMBING FIXTURE TRAP, EXCEPT AS OTHERWISE PROVIDED IN THE UPC, SHALL BE PROTECTED AGAINST SIPHONAGE AND BACK-PRESSURE, AND AIR CIRCULATION ASSURED THROUGHOUT ALL PARTS OF THE DRAINAGE SYSTEM BY MEANS OF A VENT PIPE.
4. THE VENT PIPE OPENING FROM A SOIL OR WASTE PIPE, EXCEPT FOR WATER CLOSETS AND SIMILAR FIXTURES, SHALL NOT BE BELOW THE WEIR OF THE TRAP.
5. EACH TRAP SHALL HAVE THE MANUFACTURER'S NAME STAMPED LEGIBLY IN THE METAL OF THE TRAP AND EACH TUBING TRAP SHALL HAVE THE GAUGE OF THE TUBING IN ADDITION TO THE MANUFACTURER'S NAME.
6. EVERY TRAP SHALL HAVE A SMOOTH AND UNIFORM INTERIOR WATERWAY.
7. THE TRAP SHALL BE THE SAME SIZE AS THE TRAP ARM TO WHICH IT IS CONNECTED.

SUPPLY PIPING NOTES:

1. PROVIDE SHUTOFF VALVES IN ALL DOMESTIC WATER PIPING SYSTEM BRANCHES IN WHICH BRANCH PIPING SERVES TWO OR MORE FIXTURES.
2. ALL WATER SUPPLY LINES SHALL BE TYPE L COPPER MIN. INSTALLED OVERHEAD (IF INSIDE THE BUILDING), OR TYPE L COPPER IF INSTALLED BELOW GRADE.
3. ALL HOT WATER LINES SHALL HAVE 3/4" MIN. INSULATION.
4. UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD AND HOT WATER PIPING SHALL BE 1/2" SIZE.
5. ALL STOPS, RISERS, ESCUTCHEON, P-TRAPS, OR OTHER ACCESSORIES TO BE STAINLESS STEEL OR CHROME PLATED.
6. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
7. WHERE DOMESTIC COLD AND HOT WATER PIPING DROPS INTO A PIPE CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.
8. ALL JOINTS AND FITTINGS IN WATER LINES SHALL BE SOLDERED TO MEET CURRENT REGULATIONS.
9. UNIONS AND/OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT, IN BYPASSES, AND IN LONG PIPING RUNS (100 FEET OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.
10. ALL VALVES IN THE WATER LINES TO BE BRASS.
11. ALL VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
12. ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
13. PROVIDE CHAINWHEEL OPERATORS FOR ALL VALVES IN EQUIPMENT ROOMS MOUNTED GREATER THAN 10'0" ABOVE FLOOR LEVEL; CHAIN SHALL EXTEND TO 7'0" ABOVE FLOOR LEVEL.
14. PROVIDE ALL PLUMBING FIXTURES AND EQUIPMENT WITH ACCESSIBLE STOPS.
15. ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (MEMORY STOPS).
16. ALL VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
17. PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE, OR AS INDICATED ON THE DRAWINGS.
18. IN ALL BUILDINGS WHERE POTABLE WATER AND NONPOTABLE WATER SYSTEMS ARE INSTALLED, EACH SYSTEM SHALL BE CLEARLY IDENTIFIED. EACH SYSTEM SHALL BE COLOR CODED AS FOLLOWS:

POTABLE WATER: GREEN BACKGROUND WITH WHITE LETTERING
NONPOTABLE WATER: YELLOW BACKGROUND WITH BLACK LETTERING, WITH THE WORDS "CAUTION: NONPOTABLE WATER, DO NOT DRINK"

WASTE AND VENT PIPING NOTES:

1. RUN ALL WASTE AND VENT PIPING WITH 2% MINIMUM GRADE UNLESS OTHERWISE NOTED. HORIZONTAL VENT PIPING SHALL BE GRADED TO DRIP BACK TO THE SOIL OR WASTE PIPE BY GRAVITY.
2. ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO THE CENTERLINE OF ALL PRESSURE PIPING, AND TO THE INVERT OF ALL GRAVITY PIPING.
3. ADJUST SEWER INVERTS TO KEEP TOPS OF PIPE IN LINE WHERE PIPE SIZE CHANGES.
4. ALL DRAIN PIPING, VENT PIPING, AND RELATED FITTINGS TO BE SCHEDULE 40 PVC AND CONFORM TO ASTM D-1785.
5. UNLESS OTHERWISE NOTED, ALL PIPING IS TIGHT TO UNDERSIDE OF SLAB, WITH SPACE FOR INSULATION IF REQUIRED.
6. ALL FIXTURES TO HAVE P-TRAPS & WATER STOP VALVES OF ADEQUATE SIZE PROVIDED.
7. UNLESS OTHERWISE NOTED, DRAINS SHALL BE INSTALLED AT THE LOW POINT OF ROOTS, AREAWAYS, FLOORS, ETC.
8. ALL FLOOR DRAINS SHALL HAVE TRAP PRIMING DEVICES, AUTOMATIC OR GRAVITY FLOW FROM NEAREST FIXTURE.
9. PROVIDE CLEANOUTS IN SANITARY AND STORM DRAINAGE SYSTEMS AT ENDS OF RUNS, AT CHANGES IN DIRECTION, NEAR THE BASE OF STACKS, EVERY 50 FEET IN HORIZONTAL RUNS, AND ELSEWHERE AS INDICATED.
10. ALL CLEANOUTS SHALL BE FULL SIZE OF PIPE FOR PIPE SIZES 6 INCHES AND SMALLER, AND SHALL BE 6 INCHES FOR PIPE SIZES LARGER THAN 6 INCHES.
11. ALL VTR's AS SPECIFIED ARE MIN. SIZE TO ROOF. ALL ROOF PENETRATIONS TO BE 3" MIN.
12. ALL ROOF PENETRATIONS TO PROTRUDE 16" MIN.
13. FITTINGS ON SCREWED PIPE SHALL BE OF THE RECESSED DRAINAGE TYPE. BURRED ENDS SHALL BE REAMED TO THE FULL BORE OF THE PIPE.
14. THE THREADS OF DRAINAGE FITTINGS SHALL BE TAPPED SO AS TO ALLOW ONE-QUARTER (1/4) INCH PER FOOT GRADE.
15. FITTINGS USED FOR DRAINAGE SHALL BE OF THE DRAINAGE TYPE, HAVE A SMOOTH INTERIOR WATERWAY, AND BE CONSTRUCTED SO AS TO ALLOW ONE FOURTH (1/4) INCH PER FOOT GRADE.
16. CLEANOUTS SHALL BE DESIGNED TO BE GAS AND WATERTIGHT WITHOUT THE USE OF ANY GASKET, PACKING, OR WASHER.
17. EACH HORIZONTAL DRAINAGE PIPE SHALL BE PROVIDED WITH A CLEANOUT AT ITS UPPER TERMINAL AND EACH RUN OF PIPING, WHICH IS MORE THAN ONE HUNDRED (100) FEET IN TOTAL DEVELOPED LENGTH, SHALL BE PROVIDED WITH A CLEANOUT FOR EACH ONE HUNDRED (100) FEET, OR FRACTION THEREOF, IN LENGTH OF SUCH PIPING.
18. EACH PLUMBING FIXTURE TRAP, EXCEPT AS OTHERWISE PROVIDED IN THE UPC, SHALL BE PROTECTED AGAINST SIPHONAGE AND BACK PRESSURE, AND AIR CIRCULATION SHALL BE ASSURED THROUGHOUT ALL PARTS OF THE DRAINAGE SYSTEM BY MEANS OF VENT PIPES.
19. CHANGES IN DIRECTION OF VENT PIPING SHALL BE MADE BY THE APPROPRIATE USE OF APPROVED FITTINGS AND NO SUCH PIPE SHALL BE STRAINED OR BENT. BURRED ENDS SHALL BE REAMED TO THE FULL BORE OF THE PIPE.
20. INDIRECT WASTE PIPES EXCLUDING 5' BUT LESS THAN 15' IN LENGTH SHALL BE DIRECTLY TRAPPED, BUT SHALL NEED NOT BE VENTED. TRAPS REQUIRING VENTING SHALL EXTEND SEPARATELY TO THE OUTSIDE AIR.
21. NO MORE THAN 1/3 OF TOTAL PERMITTED VENT LENGTH PER TABLE 7-5 OF CURRENT U.P.C. CAN BE INSTALLED IN HORIZONTAL POSITION UNLESS SIZE IS INCREASED BY ONE PIPE SIZE.

GENERAL HVAC NOTES

1. COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE STATE BUILDING, MECHANICAL ENERGY, FIRE, PLUMBING AND HEALTH CODES, AND REGULATIONS AS ADOPTED BY LOCAL JURISDICTIONS.
2. ALL EQUIPMENT SHALL BE THE CAPACITY AND TYPE AS SHOWN ON THE EQUIPMENT SCHEDULE AND SHALL BE THE LISTED MANUFACTURER AND MODEL NUMBER OR SHALL BE AN EQUAL APPROVED BY THE OWNER/ENGINEER.
3. CONTRACTOR IS TO BRING UP THE DISCREPANCIES AND ITEMS WHICH ARE NOT SPECIFICALLY CALLED FOR OR SHOWN BUT ARE REQUIRED FOR A COMPLETE MECHANICAL SYSTEM. ALL SUCH ITEMS REQUIRED FOR A COMPLETE SYSTEM READY FOR THE OWNER'S BENEFICIAL USE SHALL BE FURNISHED AND INSTALLED INCLUDING ALL SUCH DISCREPANCY ITEMS MENTIONED ABOVE, AT NO ADDITIONAL COST TO THE OWNER AND PER LOCAL CODES, MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE STANDARDS WITH THE ARCHITECT/ENGINEER'S APPROVAL.
4. ALL EQUIPMENT SUPPLIED FOR THESE SPECIFICATIONS SHALL BE FREE FROM DEFECTS IN MATERIAL, WORKMANSHIP, AND TITLE, AND SHALL BE OF THE KIND AND QUALITY DESCRIBED HEREIN. IF IT APPEARS WITHIN ONE YEAR FROM DATE OF FINAL ACCEPTANCE THAT EQUIPMENT DOES NOT MEET THE WARRANTIES ABOVE, THE CONTRACTOR SHALL IMMEDIATELY CORRECT ANY DEFECT AND SHALL RESTORE THE SYSTEM TO THE ORIGINAL SATISFACTORY CONDITIONS AT HIS EXPENSE. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED, OR STATUTORY. NO WARRANTY OR MERCHANT ABILITY OF FITNESS FOR PURPOSE SHALL APPLY (THE WARRANTY SHALL START FROM THE TIME OF ARCHITECT/ENGINEER'S FINAL ACCEPTANCE).
5. ENTIRE INSTALLATION OF ALL EQUIPMENT, CONTROL, PIPING, DUCTWORK, AND RELATED ACCESSORIES SHALL BE PER BASIC OWNER'S STANDARDS. MECHANICAL CONTRACTOR IS TO FAMILIARIZE HIMSELF WITH THESE STANDARDS.
6. MECHANICAL CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ROUTING AND INTALLATION FEASABILITY OF ALL EQUIPMENT, PIPING, AND DUCTWORK, AND INCLUDE IN HIS BID ADDITIONAL PIPING, DUCTWORK, FITTINGS, OFFSETS, ETC. WHICH MIGHT BE REQUIRED FOR A COMPLETE SYSTEM READY FOR OWNER'S BENEFICIAL USE.
7. COORDINATE THE CONSTRUCTION SCHEDULE WITH THE GC AND PERFORM ALL REQUIRED WORK IN STRICT ACCORDANCE WITH THE OWNER'S SCHEDULE.
8. MECHANICAL CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
9. HVAC NOTES:
   A. PROVIDE FLEXIBLE CONNECTION IN ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT AS CLOSE TO FAN AS POSSIBLE. FLEXIBLE CONNECTION SHALL CONSIST OF 6" OR MORE OF AIR TIGHT, FIRE PROOF FLEXIBLE NEOPRENE COATED WOVEN FIBROUS GLASS MATERIAL. VENT FABRICS, INC. OR APPROVED EQUAL.
   B. ALL DUCTWORK SHALL BE SHEET METAL.
   C. ALL SUPPLY & RETURN FLEXIBLE DUCTS SHALL BE CONSTRUCTED OF DOUBLE LAMINATION OF POLYESTER ENCAPSULATED STEEL WIRE HELIX FOR INNER CORE HIGH DENSITY FIBERGLASS INSULATION AND GRAY POLYESTER FILM WITH SPIRAL REINFORCEMENTS, EQUAL TO ATCO-70 SERIES (MIN. POS. PRESS. = 6' W.G. NEG. PRESS. = 0.75" W.C. & R=5.79).
   D. SEAL ALL DUCTWORK JOINTS WITH TUFF-BOND #12 SEALER AND DURO-DYNE TYPE FT-2 TAPE OR EQUAL.
   E. ALL EQUIPMENT, DUCTWORK AND PIPING SHALL BE STRUCTURALLY SUPPORTED AND SECURELY FASTENED TO BUILDING STRUCTURE IN AN ACCEPTABLE MANNER TO OWNER, ARCHITECT, ENGINEER AND LOCAL JURISDICTION AND SHALL BE SEISMICALLY BRACED PER THE SMACNA AND/OR REQUIRED BY LOCAL JURISDICTIONS.
   F. PROVIDE LOCKABLE VOLUME DAMPERS IN ALL AIR DISTRIBUTION OUTLETS.
   G. DUCT HANGERS, SUPPORTS AND METHODS OF INSTALLATION SHALL CONFORM TO ASHRAE & SMACNA RECOMMENDATIONS.
   H. DUCT SIZES SHOWN ON PLANS INDICATE INSIDE FREE AREA.
   I. ALL DUCTWORK SHALL BE CLASS-1 AIR DUCT AS APPROVED BY U.L.-181.
   J. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.
   K. ALL DUCTWORK IN UNHEATED SPACES AND SUPPLY AIR IN ANY SPACE SHALL HAVE INSULATION WITH VAPOR BARRIER JACKET WITH MINIMUM THERMAL RESISTANCE VALUE OF "R-7". INTERIOR SOUNDLINING WITH MINIMUM "R-7" SATISFIES THE INSULATION REQUIREMENT WHICH MAY BE USED IN LIEU OF EXTERIOR INSULATION.
10. ALL FIRE RATED STRUCTURE SHALL BE FIRE DAMPERED AS REQUIRED BY THE JURISDICTION.
11. FLEXIBLE DUCTS SHALL HAVE MAXIMUM 6 FEET LENGTH UNLESS SHOWN OTHERWISE AND SHALL NOT PENETRATE THROUGH ANY FIRE RATED WALLS. DO NOT INSTALL FLEXIBLE DUCTS WITHIN 6 FEET OF HEATING ELEMENT.
12. HVAC SYSTEM SHALL BE STARTED UP AND FUNCTIONALLY TESTED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL CONFORM THAT ALL HVAC SYSTEMS ARE READY FOR TESTING, ADJUSTING, AND BALANCING. HVAC SYSTEMS SHALL BE TESTED, ADJUSTED, AND BALANCED (TAB) BY CONTRACTOR CERTIFIED BY THE AABC, NEBB, OR OTHER APPROVED AGENCY. REFRIGERATION PIPING SHALL BE TESTED UNDER PRESSURE AND PROVEN TO BE LEAK FREE. REFRIGERATION SYSTEM SHALL BE STARTED UP AND BROUGHT DOWN TO DESIGN TEMPERATURE.
13. MECHANICAL, HVAC, AND PLUMBING ELEMENTS SHALL AT NO TIME COME IN CONTACT WITH CEILING CONSTRUCTION EXCEPT AS NECESSARY PENETRATIONS MAY REQUIRE.
14. ACCESS SHALL BE PROVIDED BY GC AS REQUIRED FOR INSTALLATION AND MAINTENANCE OF MECHANICAL, ELECTRICAL, AND OTHER ELEMENTS WITHIN CEILING SPACE AND AS REQUIRED BY CODE. LOCATIONS FOR SPECIAL ACCESS DOORS, HATCHES, ETC. SHALL BE COORDINATED WITH OTHER TRADES.
15. INSPECTIONS, AS REQUIRED BY LOCAL AUTHORITIES, SHALL BE COORDINATED BY GC PRIOR TO CLOSING OF CEILING.
16. SHOP DRAWINGS FOR ALL RELATED TRADES (PLUMBING, SPRINKLER, HVAC) SHALL BE SUBMITTED FOR REVIEW/APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.
17. ALL HVAC ELEMENTS SHALL MATCH ADJACENT WALL OR CEILING FINISH COLOR, INSTALLED FLUSH AND TRUE AND CENTERED WITHIN THE CEILING GRID. LOCATIONS SHALL BE PER APPROVED MECHANICAL PLANS.
18. INSULATION OF COLD WATER LINES SHALL BY PROVIDED TO PREVENT CONDENSATION DAMAGE AND IN OBSERVANCE OF ENERGY CONSERVATION PRACTICES, HOT WATER HEATING LINES SHALL BE INSULATED - SEE SPECIFICATIONS.
19. THERMOSTATS SHALL BE MOUNTED AT 4'-0" A.F.F. LOCATIONS PER MECHANICAL PLAN AND TO BE COORDINATED BY GC WITH OTHER TRADES AND APPROVED BY BUILDING MANAGEMENT REPRESENTATIVE AND ARCHITECT. MOUNT TO ALIGN VERTICALLY WITH LIGHT SWITCHES.
20. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION. ALL PRODUCT WARRANTY REGISTRATION CARDS, APPLICATIONS, AND CERTIFICATES SHALL BE COMPLETED AND TURNED OVER TO THE OWNER.

UNIT HEATER SCHEDULE											
		BASIS OF DESIGN									
TAG	DESCRIPTION	MANUFACTURER	MODEL	DESIGN FLOW	HEATING INPUT BTUH	HEATING OUTPUT BTUH	BLOWER HP	ELECTRICAL DATA V/Ø/Hz	AMPS	WEIGHT (LBS)	NOTES
UH-1	LP FIRED UNIT HEATER	MODINE	HDS 45AS0121	720	45000	36000	1/15	115/1/60	3.7	60	1

NOTES:
1. INCLUDE LP CONVERSION KIT, HORIZONTAL CONCENTRIC VENT KIT, OUTLET TERMINATION CAP.

PLUMBING FIXTURE SCHEDULE				
		BASIS OF DESIGN		
TAG	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
AD-1	PVC AREA DRAIN WITH 7 IN. FIXED TOP	WATTS	FD-663	MOUNT DRAIN @ -1" F.F.

MECHANICAL ABREVIATIONS

ABV	ABOVE
AC	ALTERNATING CURRENT
AD	ACCESS DOOR, AUTOMATIC DAMPER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ASL	ACOUSTICAL LINING
AMP	AMPERE
APPROX	APPROXIMATE OR APPROXIMATELY
ARCH.	ARCHITECT OR ARCHITECTURAL
AUTO	AUTOMATIC
BE	BOTTOM ELEVATION
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CC	COOLING COIL
CD	CEILING DIFFUSER
CEIL	CEILING
CFM	CUBIC FEET PER MINUTE
CL	CENTER LINE
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CR	CEILING REGISTER
CP	CIRCULATION PUMP
DB	DRY BULB
DC	DIRECT CURRENT
DIA	DIAMETER
DN	DOWN
DPR	DAMPER
DWG	DRAWING
DX	DIRECT EXCHANGE
E/A	EXHAUST AIR
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EL	ELEVATION
ELEV	ELEVATOR
ELEC	ELECTRIC OR ELECTRICAL
ENT	ENTERING
EQUP	EQUIPMENT
ER	EXHAUST REGISTER
ERV	ENERGY RECOVERY VENTILATOR

ESP	EXTERNAL STATIC PRESSURE
ET	EXISTING AIR TERMINAL
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F	DEGREES FAHRENHEIT
FC	FLEXIBLE CONNECTOR
FD	FIRE DAMPER
FIN	FINISH OR FINISHED
FL	FLOOR
FLEX	FLEXIBLE
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FT	FOOT OR FEET
FWE	FURNISH WITH EQUIPMENT
GA	GAUGE
GAL	GALLON
GPM	GALLONS PER MINUTE
HC	HEATING COIL
HOR	HORIZONTAL
HP	HEAT PUMP OR HORSEPOWER
HR	HOUR
HRV	HEAT RECOVERY VENTILATOR
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HZ	ALTERNATING CURRENT FREQUENCY
I.D.	INSIDE DIAMETER
IN.	INCH
IN H2O	INCHES OF WATER COLUMN
INSUL	INSULATE OR INSULATION
KW	KILOWATT
KWH	KILOWATT-HOUR
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LIN	LINEAR
LVG.	LEAVING
LWT	LEAVING WATER TEMPERATURE
MAN.	MANUAL
MAX	MAXIMUM
MD	MANUAL DAMPER
MECH	MECHANICAL
MIN	MINIMUM
NC	NORMALLY CLOSED

NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O/A	OUTDOOR AIR
OC	ON CENTER
OD	OUTER DIAMETER
OPNG	OPENING
PCF	POUNDS PER CUBIC FOOT
PF	POWER FACTOR
PH or Ø	PHASE (ELECTRICAL)
PRESS.	PRESSURE
PSI	POUNDS PER SQUARE INCH
R/A	RETURN AIR
REQD.	REQUIRED
RG	RETURN GRILLE
RR	RETURN AIR REGISTER
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
S/A	SUPPLY AIR
SF	SERVICE FACTOR
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
STD	STANDARD
SVK	SOLENOID VALVE KIT
TAB	TESTING, ADJUSTING, AND BALANCING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TOG	TOP OF GRILLE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
V	VOLT
VEL	VELOCITY
VENT	VENT, VENTILATE, VENTILATING OR VENTILATION
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WATT
WB	WET BULB
WG	WATER GAUGE
WMS	WIRE MESH SIZE
WT	WEIGHT

DUCT LEGEND

- SUPPLY AIR
- RETURN AIR
- OUTDOOR AIR
- EXHAUST AIR

MECHANICAL PIPING LEGEND

- CHILLED WATER SUPPLY (CWS)
- CHILLED WATER RETURN (CWR)
- HOT WATER SUPPLY (HWS)
- HOT WATER RETURN (HWR)
- WELL WATER SUPPLY (WWS)
- WELL WATER RETURN (WWR)

PLUMBING SUPPLY LEGEND

- DOMESTIC COLD WATER (CW)
- DOMESTIC HOT WATER (HW)
- DOMESTIC HOT WATER (HWC)
- NATURAL GAS (NG)
- FIRE SUPPRESSION (FS)
- REFRIGERANT R-410 (R)

WASTE & VENT LEGEND

- UNDERSLAB SANITARY SEWER (W)
- SANITARY SEWER (W)
- VENT PIPING (V)
- CONDENSATE PIPING (C)
- RAIN WATER LEADER (RWL)

CODE COMPLIANCE

BUILDING MECHANICAL SYSTEMS ARE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:

- 2012 INTERNATIONAL MECHANICAL CODE
- 2012 UNIFORM PLUMBING CODE
- 2012 IECC INTERNATIONAL ENERGY CONSERVATION CODE
- ANSI/ASHRAE/IESNA STANDARD 90.1-2007 ENERGY STANDARD FOR BUILDINGS EXCEPT FOR LOW-RISE RESIDENTIAL BUILDINGS
- ANSI/ASHRAE STANDARD 62.1-2007 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY
- ASHRAE STANDARD 62.2-2007 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY IN LOW-RISE RESIDENTIAL BUILDINGS

HVAC DESIGN CRITERIA

KALISPELL, MONTANA

ANNUAL DESIGN CONDITIONS: ASHRAE FUNDAMENTALS 2005

WEATHER STATION - KALISPELL, MT WMO# 727790
ELEVATION: 2966' LAT: 48.28N LONG: 114.27W
WINTER: -10.8 (99.6%)
SUMMER: 89.1 DRY BULB (0.4%)
62.3 WET BULB (0.4%)

INDOOR DESIGN CONDITIONS:
WINTER: 70 ± 2º F
SUMMER: 75 ± 2º F

MISC. SYMBOLS LEGEND

- SCHEDULE TAG SYMBOL
- THERMOSTAT
- HUMIDISTAT
- HEAT RECOVERY VENTILATOR CONTROL
- TEMPERATURE SENSOR
- HUMIDITY SENSOR
- CONTROL WIRING

DUCTWORK

- SUPPLY AIR DIFFUSER
- RETURN AIR GRILL
- EXHAUST AIR GRILL
- 12 x 12 — RECTANGULAR DUCTWORK. SIZE INDICATED IN INCHES, FIRST NUMBER IS SIDE SHOWN
- 12" Ø — ROUND DUCTWORK. DIAMETER INDICATED IN INCHES
- FLEXIBLE DUCT
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- 90° ELBOW WITH TURNING VANES
- RADIUS DUCTWORK ELBOWS ROUND OR RECTANGULAR
- BRANCH TAKE-OFF WITH VOLUME DAMPER
- S-1 / 100 CFM — DIFFUSER/GRILL LABEL:
  - DESIGNATION
  - AIRFLOW (CFM)

PIPING SYMBOLS

- ELBOW DOWN
- ELBOW UP
- TEE OUTLET DOWN
- TEE OUTLET UP
- CIRCULATOR
- UNION
- BALL VALVE
- GLOBE VALVE
- 1/8" STRAINER, WYE TYPE
- THERMOMETER
- DRAIN & FILL VALVE W/HOSE CONNECTION (SERVICE)
- CHECK VALVE, SWING
- AUTOMATIC AIR VENT
- THREE-WAY AUTOMATIC MIXING CONTROL VALVE (M)
- HEAT EXCHANGER
- THERMOSTATIC MIXING VALVE (TMV)
- FLEXIBLE CONNECTOR
- FLOW SWITCH (FS)
- FLOW BALANCING VALVE
- TWO-WAY FLOW CONTROL VALVE (M)
- TWO-WAY FLOW CONTROL VALVE, MODULATING (M)
- RELIEF VALVE
- PRESSURE REDUCING VALVE
- BACKFLOW PREVENTER
- AIR SEPARATOR (S)
- PRESSURE GAUGE (P)
- FLOWMETER - TURBINE
- WATER HAMMER ARRESTOR

SHEET LIST	
SHEET NO.	SHEET TITLE
MP0.0	MECHANICAL - PLUMBING LEGEND
M1.0	HVAC FLOOR PLAN
P1.0	PLUMBING FLOOR PLAN
E0.0	GENERAL ELECTRICAL NOTES AND SYMBOLS
E1.0	POWER AND LIGHTING PLANS

ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED IN THE DRAWINGS

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COURTNEY CARRIER
No. 15309PE
LICENSED
PROFESSIONAL ENGINEER

MONTANA FISH WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING

SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

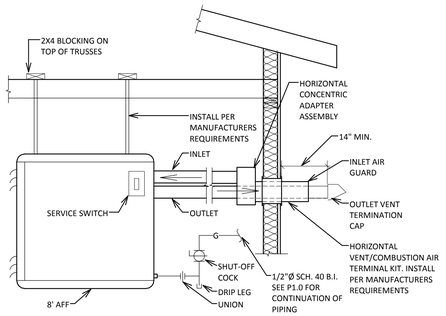
SHEET

MECHANICAL - PLUMBING LEGEND

DRAWN: TLH
CHECKED: CLC
DATE: 04/13/2016
JOB#: 160208

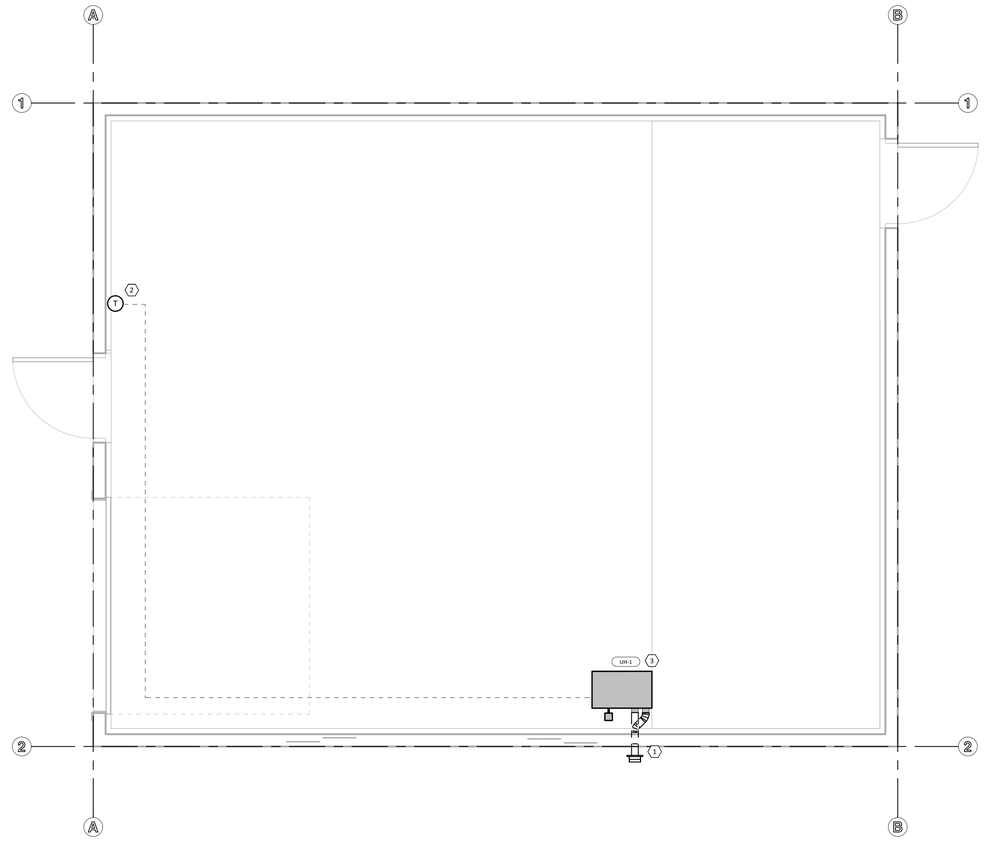
REVISIONS:

MP0.0



2 UNIT HEATER-GAS

HVAC KEYNOTES	
1	PENETRATE WALL WITH MANUFACTURER PROVIDED CONCENTRIC VENT KIT. SEE DETAIL 2/M1.0
2	MOUNT T-STAT @ 48" AFF
3	MOUNT BOTTOM OF UNIT @ 8' AFF



1 HVAC PLAN

3/8" = 1'-0"

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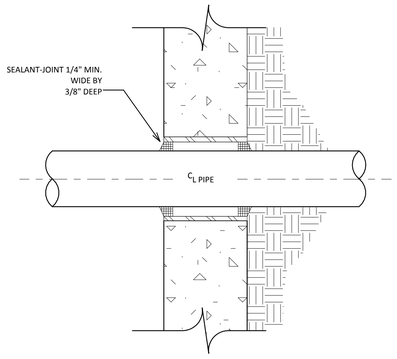
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
HVAC FLOOR PLAN

DRAWN:	TLH
CHECKED:	CLC
DATE:	04/13/2016
JOB#:	160208

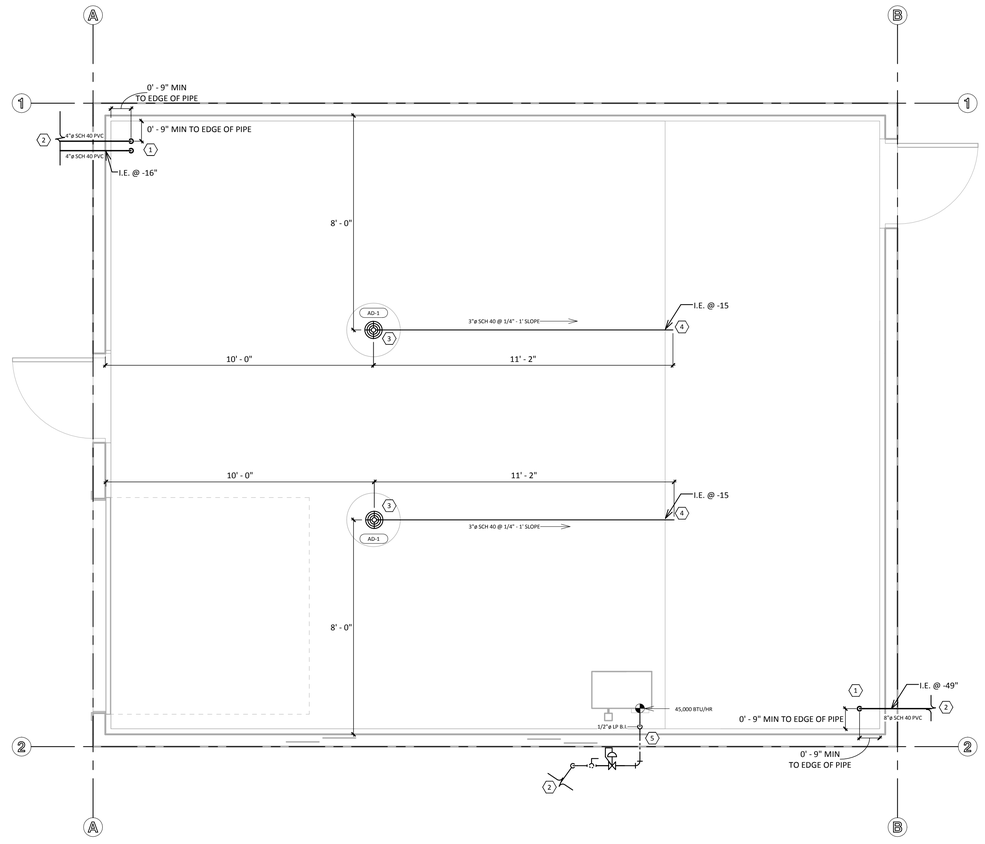
REVISIONS:

M1.0



1 TYPICAL FOUNDATION PENETRATION

PLUMBING KEYNOTES	
1	ROUTE PVC PIPE UP THROUGH SLAB TO 12" AFF, SEE 1/P1.0 FOR FOUNDATION PENETRATION DETAIL.
2	SEE CIVIL FOR CONTINUATION OF PIPING
3	MOUNT DRAIN WITH TOP @ -1" F.F. SLOPED DEPRESSION, SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
4	EXTEND 3"Ø PVC 4" BEYOND EDGE OF CONCRETE WALL. ROUTE 3"ØW AS HIGH AS POSSIBLE @ 1/4" SLOPE.
5	PLUMBING CONTRACTOR TO INSTALL B.I. PIPE FROM UNIT HEATER TO LP REGULATOR. LP SUPPLIER TO PROVIDE REGULATOR, SHUT-OFF VALVE AND PIPING TO LP TANK.



2 PLUMBING PLAN
3/8" = 1'-0"

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MONTANA FISH WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5535 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
PLUMBING FLOOR PLAN

DRAWN:	TLH
CHECKED:	CLC
DATE:	04/13/2016
JOB#:	160208

REVISIONS:

P1.0

GENERAL ELECTRICAL NOTES.

I. GENERAL ELECTRICAL NOTES: ALL SHEETS:
1. ALL ELECTRICAL EQUIPMENT, FIXTURES, MATERIALS, METHODS, AND WORK MUST BE IN ACCORDANCE AND COMPLIANCE WITH MOST RECENT APPROVED EDITION OF ADAAG, ANSI, IEEE, NEC, NEMA, NFPA, OSHA, TIA, CODES AND STANDARDS. IN ADDITION, ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, STANDARDS, AND ORDINANCES MUST BE FULLY MET.
2. ALL ELECTRICAL WORK IS TO BE PERFORMED, INSTALLED, TESTED, INSPECTED, AND APPROVED BY QUALIFIED AND LEGALLY LICENSED AND BONDED ELECTRICAL CONTRACTORS/PROFESSIONALS AND THEIR DIRECT REPORTS. WORKING ON ENERGIZED PARTS REQUIRES PROPER EQUIPMENT AND SHALL ONLY BE PERFORMED BY OSHA CERTIFIED EMPLOYEES.
3. ALL ELECTRICAL MATERIAL, EQUIPMENT, FIXTURES, AND DEVICES SHALL BE NEW AND ORIGINAL, AND BE LISTED WITH THE UNDERWRITERS LABORATORIES INC., OR EQUAL, AND SHALL MEET THEIR REQUIREMENTS, AND SHALL BEAR THEIR LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AND LABEL SERVICE IS REGULARLY FURNISHED BY THAT AGENCY. ALL ELECTRICAL MATERIAL, EQUIPMENT, FIXTURES, AND DEVICES MUST BE INSTALLED PER THE MANUFACTURERS LISTING AGREEMENT AND IN ACCORDANCE WITH THE INTENDED PURPOSE. ANY SHOP, FIELD OR SITE MODIFICATIONS TO ELECTRICAL MATERIAL, EQUIPMENT, FIXTURES, AND DEVICES, MUST NOT INTERFERE, REMOVE, OR ALTER ITS LISTING, WARRANTY, OR SAFETY AGREEMENTS.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, TOOLS, TEST EQUIPMENT, TRANSPORTATION AND PERFORM ALL OPERATIONS NECESSARY OR INCIDENTAL TO PROPER EXECUTION AND COMPLETION OF ALL "ELECTRICAL WORK" WHETHER SPECIFICALLY MENTIONED OR NOT.
5. GENERAL CONTRACTOR SHALL SECURE AND PAY ALL FEES FOR ALL NECESSARY PERMITS AND UTILITY COMPANY APPLICATIONS.
6. GENERAL CONTRACTOR SHALL PROVIDE ANY TEMPORARY ELECTRICAL POWER AND METER REQUIRED, AND COORDINATE WITH POWER COMPANY/UTILITY TO MEET THEIR REQUIREMENTS FOR SET-UP, UTILIZATION, AND REMOVAL OF TEMPORARY ELECTRICAL POWER AND SHALL COMPLY WITH NEC SEC. 305 AND FOLLOWING GENERAL NOTE 37.
7. ALL COMPLETED ELECTRICAL JOB(S) SHALL BE GUARANTEED BY THE ELECTRICAL CONTRACTOR FOR THE PERIOD OF ONE YEAR AFTER THE DATE OF ACCEPTANCE BY OWNER. ANY WORKMANSHIP PERFORMED BY THE EC FOUND TO BE DEFECTIVE OR FAULTY DURING THAT PERIOD OF TIME SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION AT THE SOLE EXPENSE OF THE EC.
8. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC, RELATED TO ELECTRICAL WORK SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION BY EC. ADDITIONALLY, ALL PRODUCT WARRANTY REGISTRATION CARDS, APPLICATIONS, AND CERTIFICATES SHALL BE COMPLETED AND FILLED OUT AND TURNED OVER TO OWNER. ALL SPARE, SURPLUS, AND RELATED ADJUSTMENT PARTS, TOOLS OR DEVICES ARE TO TURNED OVER TO OWNER.
9. GENERAL CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF ELECTRICAL "AS BUILTS" DRAWINGS AT THE COMPLETION OF THE JOB.
10. ELECTRICAL DRAWINGS ARE ESSENTIALLY REPRESENTATIVE IN NATURE, AND DIAGRAMMATIC IN STYLE, SO THAT THE EXACT SIZE AND LOCATION OF EQUIPMENT SHOWN MAY NOT BE TO SCALE, ALL DIMENSIONS AND CONDUIT/CONDUCTOR DATA SHALL BE VERIFIED IN THE FIELD. LOCATIONS AND DIMENSIONS SHALL BE PER ARCHITECTURAL DRAWINGS; ENGINEERING DOCUMENTS (IF ANY) SHALL PREVAIL IN CASE OF VARIATION IN SPECIFICATIONS. DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF GC AND OWNER BEFORE START OF WORK. FURNITURE INDICATED ON PLANS IS FOR REFERENCE ONLY.
11. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL MATERIAL, EQUIPMENT, FIXTURES, AND DEVICE LOCATIONS WITH ALL RELATED ARCHITECTURAL, MECHANICAL, AND STRUCTURAL DRAWINGS TO AVOID AND PREVENT IMPROPER INSTALLATIONS OR WASTEFUL PRACTICES.
12. TYPICAL END USER (CORD CONNECTED) ELECTRICAL EQUIPMENT, SUCH AS BUT NOT LIMITED TO, TELEPHONES, COMPUTER, OFFICE EQUIPMENT, TOOLING, OTHER CORD CONNECTED EQUIPMENT, ETC., SHALL BE PROVIDED BY OTHERS. GENERAL CONTRACTOR SHALL PROVIDE FOR COORDINATION WITH OUTSIDE VENDORS/INSTALLERS REGARDING DELIVERIES, COMMISSIONING, AND TRAINING AS DIRECTED BY OWNER.
13. COMPATIBILITY: ALL ELECTRICAL DEVICES, EQUIPMENT, WIRING, ETC. SHALL BE COMPATIBLE, EACH WITH ONE ANOTHER AND WITH EXISTING WORK AND WITH EXISTING BUILDING STANDARDS.
14. WHEN PART OF ELECTRICAL WORK, EC TO PROVIDE FULL AND COMPLETE SHOP DRAWINGS FOR DATA CABLE, FIRE ALARM SYSTEM, SECURITY ALARM SYSTEM AND LOCATIONS TO ENGINEER FOR FINAL APPROVAL. INCLUDE DIRECTORY AND VERIFY FUNCTIONAL SIGNAL LINK TO AND FROM EXISTING SYSTEM IF ANY.
15. SHOP DRAWINGS AND SUBMITTALS SHALL BE PRODUCED WITH APPLICABLE ELECTRICAL DRAWING SHEET PER DESIGN SPECIFICATION AND ALL APPLICABLE CODES AND STANDARDS AND APPROVED CHANGES OR ADDENDUMS.
16. WHERE 3RD PARTY CONTRACTOR/VENDOR PROVIDES ANY EQUIPMENT OR DEVICE THAT REQUIRES ELECTRICAL ROUGH-IN OR TERMINATION, THAT 3RD PARTY SHALL BE RESPONSIBLE FOR THE COMPLETE COORDINATION OF THESE ISSUES AND PAYMENT FOR THESE REQUIREMENTS.

II. & III. ELECTRICAL PANEL/WIRING NOTES 21 TO 40 - E4.1:
IV. ELECTRICAL SITE PLAN & NOTES (SEE C1.0):
41. GENERAL CONTRACTOR SHALL PROVIDE ALL TRENCHING, COMPACTION, BACKFILL, WARNING TAPE, CONDUITS AND PULL LINES AS REQUIRED FOR EACH NEW ELECTRICAL SERVICE AND ANY AT EXTERIOR UTILIZATION EQUIPMENT LOCATIONS.
42. EC/GENERAL CONTRACTOR SHALL INSTALL PRIMARY POWER SERVICE CONDUIT(S) DESIGNATED AT A LOCATION DETERMINED BY THE POWER COMPANY AND WITHIN PLAT EASEMENTS. INSTALL CONDUITS W/PULL LINES PER POWER COMPANY STANDARDS.
43. EC/GENERAL CONTRACTOR SHALL INSTALL CONCRETE TRANSFORMER PAD/VAULT(S), PROTECTIVE BOLLARDS, AND PRIMARY/SECONDARY CONDUIT TO INCOMING SERVICE SECTION OF THE MAIN DISTRIBUTION PANEL(S) DESIGNATED AT A LOCATION DETERMINED BY THE RELATED ARCHITECTURAL, SITE, AND STRUCTURAL DRAWINGS ELSEWHERE IN THIS PRINT PACK. INSTALL CONCRETE TRANSFORMER PAD/VAULT(S) PER POWER COMPANY STANDARDS AND SET-BACKS. REFER TO THE RISER DIAGRAM FOR FURTHER INFORMATION.
44. EC/GENERAL CONTRACTOR SHALL PROVIDE ONE 2" TELEPHONE UTILITY SERVICE CONDUIT IN FROM PROPERTY LINE TO NEW SERVICE BOARD LOCATED ELSEWHERE IN THIS PRINT PACK. PROVIDE A 3/4" PLYWOOD BACKER, ONE DEDICATED DUPLEX RECEPTACLE, AND ONE 6 GAGE CU GROUND WIRE ROUTED TO GROUND ROD. COORDINATE COMPLETE INSTALLATION WITH UTILITY AND CONFORM TO ALL TELEPHONE UTILITY STANDARDS.
45. WHERE CATV PRESENT, EC/GENERAL CONTRACTOR SHALL PROVIDE ONE 2" CABLE TELEVISION SERVICE CONDUIT IN FROM PROPERTY LINE TO NEW SERVICE BOARD LOCATED ELSEWHERE IN THIS PRINT PACK. PROVIDE A 3/4" PLYWOOD BACKER, ONE DEDICATED DUPLEX RECEPTACLE, AND ONE 10 GAGE CU GROUND WIRE ROUTED TO GROUND ROD. COORDINATE COMPLETE INSTALLATION WITH UTILITY AND CONFORM TO ALL CABLE TELEVISION UTILITY STANDARDS.
46. COPPERWELD GROUND RODS SHALL BE 5/8" DIA X8' LONG, SEPARATED BY 6'. RESISTANCE TO GROUND MUST BE 25 OHMS OR LESS (5 OHMS OR LESS RECOMMENDED). CONNECT GROUNDING WIRE DIRECTLY TO GROUND ROD. MINIMIZE CONDUCTOR RIGHT ANGLE BENDS. MAXIMUM LENGTH OF CONDUCTOR SHALL BE 10'. GROUNDING ELECTRODE/JUMPER CONNECTIONS SHALL BE MADE WITH A BOLTED PRESSURE OR COMPRESSION TYPE CONNECTOR SUITABLE FOR DIRECT BURIAL OR EXOTHERMIC WELD. MINIMUM WIRE SIZE PER NEC TABLE 250-66. REFER TO GROUNDING DIAGRAM ELSEWHERE IN THIS PRINT PACK.

V. ELECTRICAL COMMUNICATION NOTES (SEE DATA/PHONE MDF DETAIL DRAWING E4.0):
51. COMMUNICATION CIRCUITS SHALL CONFORM TO NEC 800 AND TIA-568A, 569, 607 AND FCC TITLE 47 CFR 68.
52. COMMUNICATION EQUIPMENT SHALL BE UL LISTED TO SECTIONS 444, 497, 1459, AND 1863.
53. PERFORMANCE OF NETWORKS SHALL CONFORM TO ANSI/IEEE STD. 802.3 (.5 FOR TOKEN RING APPS.).

VI. ELECTRICAL SUBMITTAL NOTES (WHERE APPLICABLE/PER CONTRACT):
A. INCLUDE SHOP DRAWING, EQUIPMENT/PART INFORMATION, APPLICATION NOTES, WARRANTY INFORMATION
1) SWITCHGEAR, PANELBOARDS, DISCONNECTS, OVERCURRENT DEVICES WITH SCHEDULE, AND TVSS
2) LIGHTS BY TYPE AND FINISH, INSTALLATION, TRIM, AIMING, BALLAST, BULB, AND CONTROL VOLTAGE
3) ALARM SYSTEMS (FIRE, SECURITY, CCTV)
4) LIGHT CONTROL SYSTEM BY CONTRACTOR SIZE, CONTROL AND OVERRIDE
5) RELATED/REQUIRED DIVISION 15, MECHANICAL, SYSTEM- DISCONNECTS AND STARTERS.
6) RELATED/REQUIRED DIVISION 2, SITE UTILITY EQUIPMENT AND CONTROL, SEPTIC, AND WATER WELL, SYSTEM
7) ELECTRICAL GROUNDING SYSTEM
8) INCLUDE ANY INTENDED CHANGES BEING SUBMITTED FOR APPROVAL TO SPECIFIED BUILDING STANDARD ELECTRICAL DEVICES, MATERIALS, OR UTILIZATION EQUIPMENT.
*** NOTE: ALL ELECTRICAL SUBMITTALS SHALL BE PROVIDED TO ENGINEERING FOR APPROVAL. AFTER G.C. APPROVES SUBSTITUTION REQUIRES 10 DAY ADVANCE NOTICE.

VII. ELECTRICAL TEST(S) NOTES:
A. CLOSEOUT SUBMITTALS: PROCEDURES FOR CLOSEOUT SUBMITTALS.
1. PROJECT RECORD DOCUMENTS: ACCURATELY RECORD THE FOLLOWING.
A. LOCATIONS OF ELECTRICAL COMPONENTS AND GROUNDING ELECTRODES.
B. COMPLIANCE WITH I. GENERAL ELECTRICAL NOTES 5,6,7,8, & 9 (ABOVE).
B. TESTING AND INSPECTION:
1. INSPECT AND TEST IN ACCORDANCE WITH NETA ATS, EXCEPT SECTION 4.
2. PERFORM INSPECTIONS AND TESTS LISTED IN NETA ATS, SECTION 7.13.
3. FIELD QUALITY CONTROL - ELECTRICAL TESTING AND INSPECTION
C. REGULATORY REQUIREMENTS:
1. SAFETY PRACTICES: INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING REQUIREMENTS:
A. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 - OSHA.
B. ACCIDENT PREVENTION MANUAL FOR INDUSTRIAL OPERATIONS, SEVENTH EDITION, NATIONAL SAFETY COUNCIL, CHAP. 4.
C. APPLICABLE STATE AND LOCAL SAFETY OPERATING PROCEDURES.
D. NETA SAFETY/ACCIDENT PREVENTION PROGRAM.
E. NOT USED.
F. NFPA 70E - ELECTRICAL SAFETY REQUIREMENTS FOR EMPLOYEE WORKPLACE.
G. AMERICAN NATIONAL STANDARDS FOR PERSONNEL PROTECTION, ANSI Z244.1.
2. PERFORM TESTS WITH APPARATUS DE-ENERGIZED EXCEPT WHERE OTHERWISE SPECIFICALLY REQUIRED HEREIN.
3. POWER CIRCUITS: CONDUCTORS SHORTED TO GROUND BY A HOT LINE GROUNDED DEVICE APPROVED FOR THE PURPOSE.
D. TESTS AND INSPECTIONS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
1. PROPER OPERATION OF LIGHTS, SWITCHES, RECEPTACLES, AND SPECIFIED EQUIPMENT.
2. CONTINUITY OF RACEWAY SYSTEM.
3. INSULATION LEAKAGE AND IMPEADANCES
4. GROUND SYSTEM RESISTANCE.
5. ELIMINATION OF REVERSE ROTATION AND SINGLE-PHASING OF MOTORS.
6. SUB-SYSTEM TESTS INDICATED IN OTHER DIVISIONS (HVAC, SEPTIC, LIFE SAFETY) SYSTEMS AS SPECIFIED.
7. PROPER OPERATION OF FIRE DETECTION SYSTEMS SPECIFIED IN DIVISION 16.

VIII. GENERAL SYMBOL NOTES (REF E4.0):
1. ALL SWITCHES AND RECEPTACLES ARE AS SPECIFIED OR APPROVED "COMMERCIAL" GRADE EQUAL.
2. SWITCHES AND INSTALLATION OF SAME, SHALL FULLY COMPLY WITH NEC ARTICLE 230.
3. ALARM, COMPUTER, HVAC, LIGHTS, AND UTILITY RECEPTACLES EACH REQUIRE SEPARATE WIRING HOME RUN U.O.N.
4. NOT USED.
5. DO NOT MIX NEUTRALS BETWEEN PHASES FOR SINGLE PHASE CIRCUITS U.O.N.
6. ALL TOGGLE SWITCHES ARE TO BE FLUSH MOUNTED AT 42" A.F.F., U.O.N., TO BOTTOM AND BE PROVIDED WITH A THERMOPLASTIC COVER PLATE TO MATCH DEVICE UNLESS OTHERWISE SPECIFIED. COLOR OF DEVICE TO BE IVORY/IVORY EXCEPT KITCHEN, BATHROOMS, & MECHANICAL ROOM ARE STAINLESS STEEL.
7. RECEPTACLES AND INSTALLATION OF SAME, SHALL FULLY COMPLY WITH NEC ARTICLE 210.
8. ALL RECEPTACLES, COAX, DATA, TELEPHONE, ETC. ARE TO BE FLUSH MOUNTED AT 12" A.F.F., U.O.N., TO BOTTOM AND BE PROVIDED WITH A THERMOPLASTIC COVER PLATE TO MATCH THE DEVICE UNLESS OTHERWISE SPECIFIED. COLOR OF DEVICE TO BE IVORY/IVORY EXCEPT KITCHEN, BATHROOMS, & MECHANICAL ROOM ARE STAINLESS STEEL..
9. ALL BACK-TO-BACK DEVICES TO BE OFFSET HORIZONTALLY 6" MINIMUM.
10. EC TO PROVIDE, PER CONTRACT, ROUGH-IN TO CEILING FREE SPACE OR COMMUNICATION NETWORK LOCATION AND INSTALL 1/2" CONDUIT, MUD RING, AND JUNCTION BOX FOR COMBINATION DATA/TELEPHONE OUTLETS, FIRE & ALARM OUTLETS. METAL RACEWAY AND BOXES FOR FIRE ALARM CIRCUITS.
11. PHONE/DATA/CATV FACE PLATE, WIRING TERMINATIONS, AND TESTING BY OTHERS.
12. ALL SWITCHES AND RECEPTACLES SHALL BE UL LISTED AND OF AN APPROVED NEMA CONFIGURATION.
13. AUDIO SYSTEM & SECURITY TYPICAL ROUGH-IN WIRES AND AUDIO EQUIPMENT BY OTHERS. (CONDUIT STUB BY EC).
* EACH DEVICE OR OTHERS PER "LEVITON" (1-800-323-8920) CATALOG D-5023 OR EQUAL.

ELECTRICAL LEGEND

LIGHTING
- FLUORESCENT STRIP
- SURFACE-MOUNT FLUORESCENT LIGHT
- RECESSED FLUORESCENT LIGHT
- RECESSED FLUORESCENT LIGHT
- RECESSED CAN LIGHT
- RECESSED EMERGENCY CAN LIGHT
- PENDANT LIGHT
- WALL MOUNTED SCONCE
- BOLLARD LIGHT
- POLE-MOUNTED LIGHT, SINGLE HEAD
- POLE-MOUNTED LIGHT, DOUBLE HEAD
- WALLPACK
- EXIT LIGHT W/ DIRECTIONAL ARROW
- WALL-MOUNT EMERGENCY FLOODLIGHT
- EXHAUST FAN
- EXHAUST FAN WITH LIGHT FIXTURE
- PHOTOCELL

OUTLETS
- WALL MOUNTED DUPLEX OUTLET
- WALL MOUNTED TRIPLEX OUTLET
- WALL MOUNTED QUAD OUTLET
- WALL MOUNTED DUPLEX OUTLET WITH ISOLATED GROUND
- WALL MOUNTED SINGLE OUTLET WITH SEPARATE CIRCUIT
- WALL MOUNTED DUPLEX OUTLET WITH SEPARATE CIRCUIT
- WALL MOUNTED GFI DUPLEX OUTLET
- WEATHER PROOF PROVIDE WEATHER PROOF POWER OUTLETS TO OUTSIDE OF BUILDING
- FLOOR MOUNTED DUPLEX OUTLET
- WALL MOUNTED DUPLEX OUTLET WITH GROUND FAULT INTERRUPTER
- SINGLE SPECIAL PURPOSE REC OUTLET
- DOUBLE SPECIAL PURPOSE REC OUTLET

SWITCHES
- SWITCH IN CRAWL SPACE
- DOUBLE POLE SWITCH
- SINGLE POLE SWITCH
- 3-WAY SWITCH
- 4-WAY SWITCH
- PULL STATION
- TWO CIRCUT SWITCH
- THREE CIRCUT SWITCH
- KEY OPERATED SWITCH
- SWITCH WITH TIMER
- MOTION CONTROLLED SWITCH
- DIMMER SWITCH
- DEHUMIDITY SWITCH
- DIGITAL LIGHTING SWITCH
- SWITCH WITH FUSE
- SMALL MOTOR DISCONNECT SWITCH

SECURITY/INTERCOM
- DOOR BELL, LOCATE BELL @ 7'-0" AFF
- PUSH BUTTON FOR ELECTRIC DOOR STRIKE RELEASE
- RECESSED DOOR CONTACT
- KEYPAD
- EMERGENCY PANEL
- SPEAKER, 7.5 WATT
- PUSH BUTTON STATION
- PUSH BUTTON STATION W/ SPEAKER
- VOLUME CONTROL
- MICROPHONE
- ELECTRIC LATCH
- DOOR POSITION INDICATOR SWITCH
- OS OCCUPANCY SENSOR
- WALL OUTLET FOR CCTV CAMERA
- CABLE TELEVISION PORT
- POWER PACK

CIRCUITING
- JUNCTION BOX
- ELECTRICAL DISTRIBUTION PANEL
- A-1 HOMERUN TO PANEL A, ARROWHEADS INDICATE # OF CIRCUITS. HASH MARKS INDICATE # OF CONDUCTORS
- = NEUTRAL; = HOT; = ISOLATED GND; = RETURN
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- UNDERGROUND CONDUIT
- CONDUIT HIDDEN IN WALLS/CEILING
- PANEL BOARD
- CIRCUIT BREAKER
- UTILITY METER
- UTILITY POLE
- GENERATOR
- AUTOMATIC TRANSFER SWITCH
- TRANSFORMER
- GROUND ROD

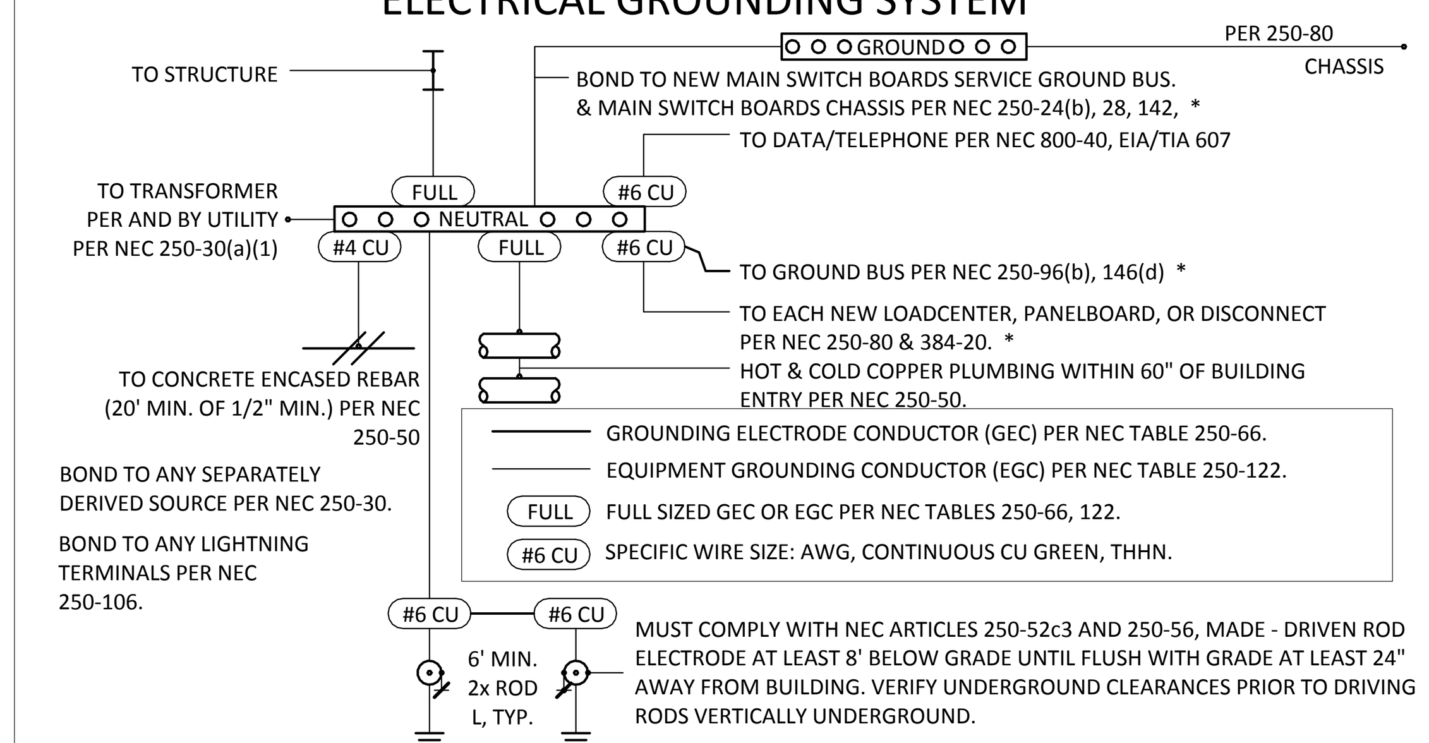
LOW VOLTAGE
- GROUND
- TIME CLOCK
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- RELAY SWITCH

PUMPS/MOTORS
- PUMP
- MOTOR
- VARIABLE SPEED PUMP
- PUMP CONTROL PANEL
- EQUIPMENT DISCONNECT
- MAGNETIC MOTOR STARTER
- MAGNETIC MOTOR STARTER WITH DISCONNECT
- 20A, 3 POLE, DUEL ELEMENT FUSE WITH DISCONNECT
- FUSE
- FUSE WITH DISCONNECT
- THERMOSTAT

PHONE/DATA
- TELEPHONE PORT
- DATA PORT
- DATA/PHONE PORT
- DATA/PHONE PORT FLOOR MOUNTED
- DATA/PHONE JUNCTION BOX
- TELEPHONE TERMINAL BOARD
- T/P TELE-POWER POLE

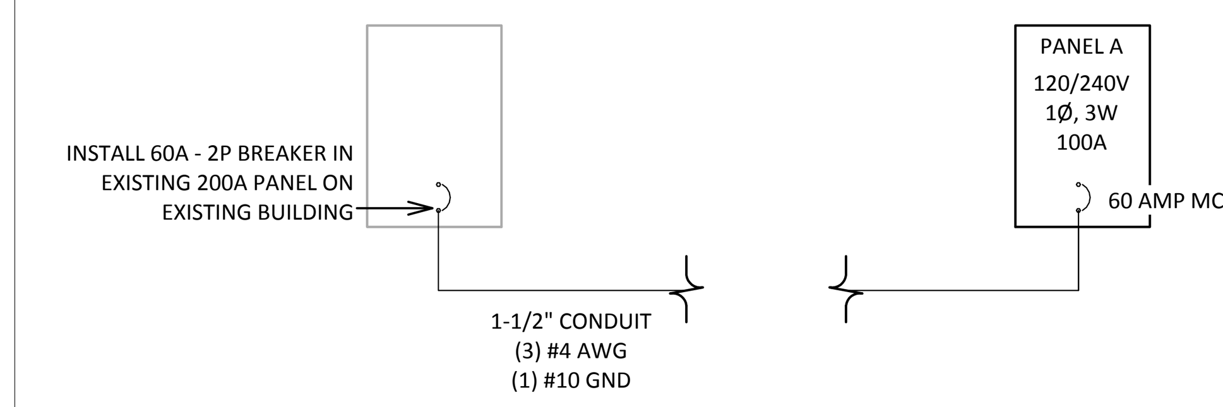
FIRE ALARM SYSTEM
- EXIT SIGN OUTLET
- EMERGENCY BATTERY BACKED DUAL HEAD LIGHT
- EMERGENCY BATTERY BACKED THREE HEAD LIGHT
- ADA HORN/STROBE PROVIDE CODE APPROVED FIRE, SMOKE ALARM SYSTEM COMPLETE
- FIRE ALARM STROBE
- DUCT SMOKE DET. AS NECESSARY
- SMOKE DETECTOR
- SMOKE DETECTOR PHOTO
- SMOKE DETECTOR ION
- MAGNETIC DOOR HOLD
- FIRE ALARM PULL STATION
- END OF LINE DEVICE
- DUCT SMOKE DETECTOR
- HEAT DETECTOR 135 RR IN MECH. ROOM
- SMOKE DETECTOR PHOTO/ION COMBO
- EXIT SIGN WITH DUAL HEAD EMERGENCY LIGHT

ELECTRICAL GROUNDING SYSTEM



PROVIDE 2 EA (MIN.) 8' ROD 5/8" DIAMETER COPPER WELD, 25 Ohm OR LESS (5 Ohm TARGET), PROVIDE 12x4x1/4 Cu CONTINUOUS ISOLATED NEUTRAL & BONDED GROUND BUS IN MAIN ENCLOSURE PROVIDE ALL GROUNDING AND BONDING CONNECTORS AND ACCESSORIES BY ILSCO, OR EQUAL. PROVIDE ALL GROUND RODS BY THOMAS AND BETTS, OR EQUAL. PROVIDE LIGHTNING PROTECTION AS REQUIRED, LIGHTNING PROTECTION EQUIPMENT HARGER, OR EQUAL.

GROUNDING PERFORMANCE CRITERIA:
1. INSTALL ROD ELECTRODES WHERE SHOWN AND ANY ADDITIONAL REQUIRED TO ACHIEVE SPECIFIED RESISTANCE TO GROUND. PROVIDE SEPARATE EQUIPMENT GROUNDING CONDUCTOR (INSULATED) WITHIN EACH FEEDER AND BRANCH CIRCUIT.
2. SUPPLEMENT THE GROUNDED NEUTRAL OF THE SECONDARY DISTRIBUTION SYSTEM WITH AN EFFECTIVE EQUIPMENT GROUNDING SYSTEM TO ADEQUATELY AND PROPERLY SAFEGUARD ALL ELECTRICAL EQUIPMENT AND PERSONNEL. INSTALL EACH EQUIPMENT GROUNDING SUCH THAT ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS, JUNCTION BOXES, OUTLET BOXES, CABINS, PULL BOXES, AND CONDUCTIVE FRAMES, ENCLOSURES, OR OTHER CONDUCTIVE PARTS IN CLOSE PROXIMITY WITH ELECTRICAL POWERED CIRCUITS OPERATE CONTINUOUSLY AT GROUND (ZERO) POTENTIAL (VOLTS) AND PROVIDE A CONTINUOUS LOW IMPEDANCE PATH FOR POSSIBLE GROUND FAULT CURRENTS AND SURGE VOLTAGES.
3. PROVIDE ALL GROUNDING AND BONDING OF ELECTRICAL SERVICE, CIRCUITS, EQUIPMENT, COMMUNICATIONS SYSTEMS, AND SIGNAL SYSTEMS AS REQUIRED BY THE NEC, LOCAL CODES AND ORDINANCES, AND THE POWER & PHONE COMPANIES, AND THESE CONTRACT DOCUMENTS. INSTALL, BOND, AND TEST GROUND ELECTRODE SYSTEM TOGETHER PER NEC ARTICLES 110, 200, 250 AND 280, NFPA 780-1997. * = 200% SIZED WHERE >50% NONLINEAR LOADS PRESENT.



6 ELECTRICAL RISER DIAGRAM

LIGHTING SCHEDULE

NOTE: PROVIDE LIGHTING SUBMITTAL TO ARCHITECT FOR APPROVAL

FIXTURE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	LAMP	# OF LAMPS	EMERGENCY	VOLTAGE	VA	NOTES
L-1	CEILING MOUNTED LIGHT - 150W MH	LITHONIA	VRR150MLPI	MH	1		120	191	1)
E-1	EMERGENCY EGRESS SIGN / LIGHT	EXITRONIX	VEX-WPC-1-R-W-G2-R	LED	-	X	120	3.6	
E-2	EXTERIOR EGRESS LIGHT	EXITRONIX	2CLED-G2-WP	LED	-	X	120	2	
WP-1	EXTERIOR WALL PACK	LITHONIA	OLFL-14-PE-BZ	LED	-		120	18	2)

NOTES:
1) METAL HALIDE LAMP SEE LIGHTING CONTROL SYSTEM DESCRIPTION ON THIS PAGE
2) INCLUDE PHOTOCELL & MOTION SENSOR (LITHONIA OMS 2000)

ALL FIXTURES "OR EQUAL" WITH PRIOR OWNER APPROVAL

LIGHTING CONTROL SYSTEM
1. INTERIOR METAL HALIDE LIGHTS SHALL BE CONTROLLED BY A PROGRAMMABLE TIMER CONTROL SYSTEM. BASIS OF DESIGN IS A NSI TORK DIGITAL TIME SWITCH MODEL DG180A.
2. ALL (9) LIGHTS SHALL BE CONTROLLED BY TIMER.
3. CIRCUIT SWITCHES TO ALLOW LIGHTS TO BE MANUALLY TURNED ON/OFF DURING OFF-PROGRAMMED TIMED PERIODS.

GENERAL LIGHTING CRITERIA:

1. LIGHT FIXTURES & LUMINARIES VOLTAGE SHALL MATCH SERVICE AND CIRCUIT VOLTAGE AVAILABLE & ASSIGNED.
2. TYPICAL EMERGENCY AND EXIT LIGHTS SHALL BE WIRED TO NEAREST ROOM LIGHTING CIRCUIT AHEAD OF ANY CONTROLS OR SWITCHING.
3. LIGHTING LOCATIONS & AIMING SHALL BE COORDINATED WITH THE ARCHITECT'S REFLECTED CEILING PLAN & ELEVATIONS. WHEN COORDINATING REFLECTED CEILING PLANS, TYPICAL LIGHTING LOCATIONS SHALL TAKE PRECEDENCE OVER HVAC DIFFUSER, SPEAKERS, AND SPRINKLER HEADS, U.O.N., REPORT ANY DISCREPANCY.
4. NA
5. NA
6. CONTRACTOR SHALL VERIFY EACH J-BOX HAS SUFFICIENT ATTACHMENT ANCHORAGE TO SUPPORT LIGHTING OR FAN WEIGHT LOADS.
7. EXIT SIGNS SHALL BE FURNISHED WITH NUMBER OF FACES AND DIRECTIONAL ARROWS AS REQUIRED TO SUIT PLAN AND THE LOCAL AUTHORITY.
8. NIGHT LIGHTS ARE DESIGNATED WITH "HATCH" & ARE CONTROLLED AT PANEL (24-HOUR).
9. CONTRACTOR SHALL VERIFY ALL BULBS, COLORS, LENGTHS, TRIMS, CEILING TYPES, MOUNTINGS, FINISHES, ETC., WITH THE ARCHITECT, PRIOR TO PLACING FINAL LIGHTING PURCHASE ORDER, INCLUDING THE INTENT OF ALL APPROVED REVISIONS OR PUBLISHED ADDENDUMS.

PANEL SCHEDULE

PANEL: A 120/240, 1PH — **TOTAL CALCULATED LOAD: 9,724 VA**

NO.	DESCRIPTION	OCP	TYPE	(VA)	(A)	PH	(A)	(VA)	TYPE	OCP	DESCRIPTION	NO.
1	RECPT - WEST (GFI)	20A-1P	R	720	6.0	A	14.3	1719	C	20A-1P	LIGHTS INTERIOR	2
3	RECPT - EAST (GFI)	20A-1P	R	900	7.5	B	0.4	48	C	20A-1P	LIGHTS EMERGENCY/EXTERIOR	4
5	RECPT - WELDER	20A-1P	N	1920	16	A	3.7	444	H	15A-1P	UNIT HEATER	6
7	RECPT - UV LIGHT - DEDICATED CIRCUIT	20A-1P	C	1596	13.3	B					SPARE	8
9	RECPT - OH DOOR	20A-1P	R	1176	9.8	A						10
11	RECPT - EXTERIOR SOUTH	20A-1P	R	180	1.5	B						12
13	RECPT - EXTERIOR NORTH	20A-1P	R	180	1.5	A						14
15	SPARE					B						16
17						A						18
19						B						20
21						A						22
23						B						24

LOAD:	CONNECTED		CALCULATED	
(C)ONTINUOUS:	3363	x1.25	= 4204	VA
(R)ECEPTACLE: (1ST 10 KVA)	3156	x 1.00	= 3156	VA
(R)ECEPTACLE: (REMAIN)		x 0.50	=	VA
(N)ON-CONTINUOUS:	1920	x 1.00	= 1920	VA
(H)EATING:	444	x 1.0	= 444	VA
(A)IR CONDITIONING		x 1.00	=	VA
(L)ARGEST MOTOR		x 1.25	=	VA

TOTAL ADDITIONAL = 9724 VA
40.5 AMPS

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MONTANA COURTNEY CARRIER No. 15309PE LICENSED PROFESSIONAL ENGINEER

MONTANA FISH WILDLIFE & PARKS
NEW FISH ISOLATION BUILDING
SEKOKINI SPRINGS FISH HATCHERY
5635 BLANKENSHIP ROAD, WEST GLACIER, MT

SHEET
GENERAL ELECTRICAL NOTES AND SYMBOLS

DRAWN: TLH
CHECKED: CLC
DATE: 04/13/2016
JOB#: 160208

REVISIONS:

E0.0

GENERAL NOTES:

1. ALL RECEPTACLES SHALL BE WEATHER-RESISTANT (WR) GFCI TYPE

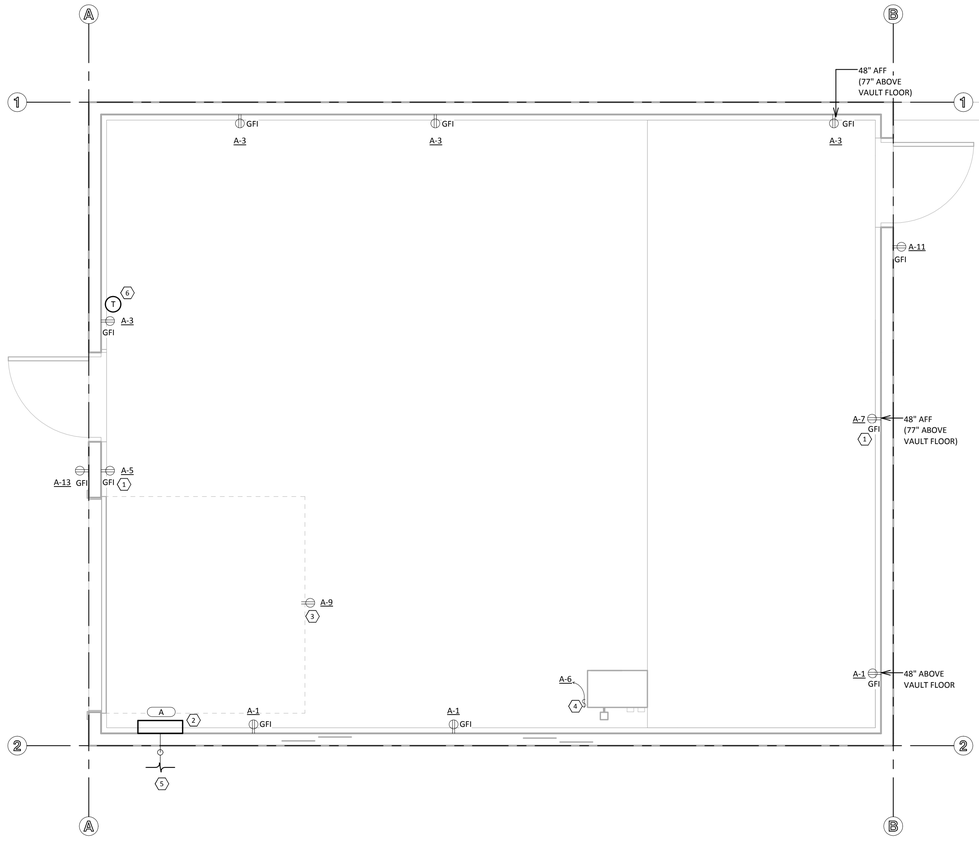
2. ALL RECEPTACLES SHALL BE PROTECTED WITH DIECAST TWO GANG SELF CLOSING COVERS WITH GASKETS FOR GFCI DEVICES. THOSE RECEPTACLES NOTED SHALL BE PROTECTED WITH DIECAST IN-USE COVERS

3. ALL RECEPTACLE AND SWITCH BOXES SHALL BE WEATHER PROOF.

4. ALL BOXES, CONDUITS, ETC. SHALL BE INSTALLED AFTER SPRAY-IN FOAM INSULATION AND BE SURFACE MOUNTED.

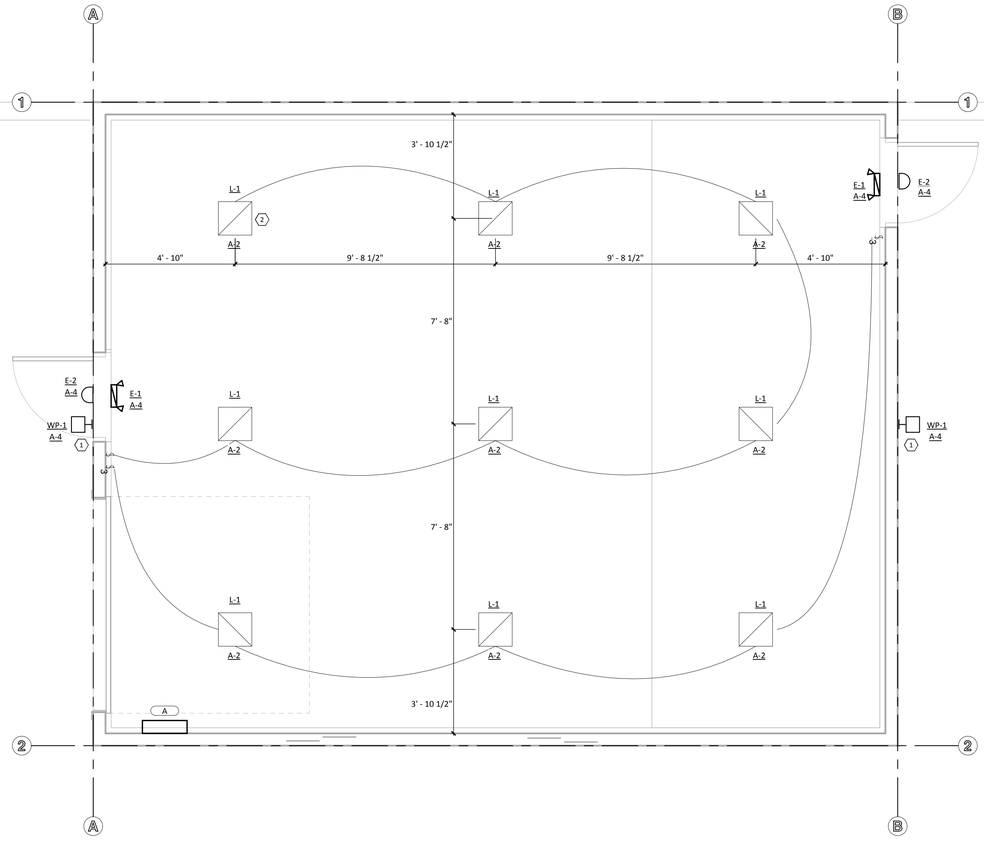
5. MOUNT ALL RECEPTACLES @ 48" AFF, U.N.O.

POWER KEYNOTES	
1	IN-USE WEATHER PROOF COVER
2	COORDINATE WITH CONTRACTOR FOR BLOCKING REQUIREMENTS TO MOUNT SURFACE MOUNTED PANEL TO.
3	RECEPTACLE FOR FUTURE OVER HEAD DOOR MOTOR, MOUNT ON CEILING
4	MOUNT SURFACE SWITCH ON UH-1
5	SEE 6/E0.0 FOR CONDUIT AND FEEDER SIZE, AND C1.1 FOR CONTINUATION OF UNDERGROUND POWER.
6	E.C. TO INSTALL 1/2" CONDUIT FROM T-STAT J-BOX TO UH-1. MC TO PULL LOW VOLTAFE T-STAT WIRE.



1 POWER PLAN
3/8" = 1'-0"

LIGHTING KEYNOTES	
1	INSTALL WP-1 CENTERED ON EXTERIOR WALL @ 12' AFF
2	INSTALL L-1 IN PLYWOOD PANEL SIMILAR TO DETAIL 7/A4.0



2 LIGHTING PLAN
3/8" = 1'-0"

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SHEET
POWER AND LIGHTING PLANS

DRAWN: TLH
CHECKED: CLC
DATE: 04/13/2016
JOB#: 160206

REVISIONS:

E1.0